Cable Guide

Part No. 117339-A Rev. A
September 1997

Bay Networks

Bay Networks

4401 Great America Parkway
Santa Clara, CA 95054

8 Federal Street
Billerica, MA 01821

Copyright © 1997 Bay Networks, Inc.

All rights reserved. Printed in the USA. September 1997.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Bay Networks, Inc.

Trademarks

ACE, AFN, AN, BCN, BLN, BN, BNX, CN, FN, FRE, GAME, LN, Optivity, PPX, and Bay Networks are registered trademarks and Advanced Remote Node, ANH, ARN, ASN, Bay•SIS, BayStack, BayStream, BCNX, BLNX, EZ Install, EZ Internetwork, EZ LAN, IP AutoLearn, PathMan, Quick2Config, RouterMan, SN, SPEX, Switch Node, System 5000, Bay Networks Press, and the Bay Networks logo are trademarks of Bay Networks, Inc.

Microsoft, MS, MS-DOS, Win32, Windows, and Windows NT are registered trademarks of Microsoft Corporation.

All other trademarks and registered trademarks are the property of their respective owners.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Bay Networks, Inc. reserves the right to make changes to the products described in this document without notice.

Bay Networks, Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

USA Requirements Only

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

European Requirements Only

EN 55 022 Statement

This is to certify that the Bay Networks <product or system name> is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

To maintain compliance with FCC radio frequency emission limits, shielded cables are required to connect equipment to other Class A certified devices and the use of quadshield, RG-6/U type CATV cable is required for connection to the CATV system. Any changes or modifications may void the user's authorization to operate this equipment.

EN 55 022 Statement

This is to certify that the Bay Networks <product or system name> is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class B (CISPR 22).

Compliance is dependent upon the use of shielded <TBD by product>.

EC Declaration of Conformity

This product conforms (or these products conform) to the provisions of Council Directive 89/336/EEC and 73/23/EEC. The Declaration of Conformity is available on the Bay Networks World Wide Web site at www.baynetworks.com.

Japan/Nippon Requirements Only

Voluntary Control Council for Interference (VCCI) Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Voluntary Control Council for Interference (VCCI) Statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Voluntary Control Council for Interference (VCCI) Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Voluntary Control Council for Interference (VCCI) Statement

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Canada Requirements Only

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (<product or system name>) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (<product or system name>) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (<product or system name>) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (<product or system name>) respecte les limites de bruits radioélectriques visant les appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice: For equipment using loopstart lines, please note that the Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed 5.0. The REN is located on the "FCC Rules Part 68" label located on the bracket of the module, or on the back of the unit.

Canada CS-03 -- Règles et règlements

Note: L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Avis: Veuillez prendre note que pour tout appareillage supportant des lignes de type "loopstart," vous pouvez utiliser le Ringer Equivalence Number (REN) attribué à chaque terminal pour déterminer le nombre maximal de terminaux qui peuvent être branchés à votre interface de téléphones. Le raccordement à l'interface pourra se composer de toute combinaison de terminaux, pour autant que la somme des RENs ne dépasse pas cinq. Le REN figure sur l'étiquette "FCC Rules Part 68" située sur le support du module ou à l'arrière de l'unité.

FCC Part 68 Compliance Statement

This equipment complies with Part 68 of FCC Rules. All direct connections to telephone network lines must be made using standard plugs and jacks compliant with FCC Part 68. Please note the following:

1. You are required to request service from the telephone company before you connect the unit to a network. When you request service, you must provide the telephone company with the following data:
   - When you request T1 Service, you must provide the telephone company with
     -- The Facility Interface Code

        Provide the telephone company with all the codes below:

        - 04DU9-BN (1.544 MB, D4 framing format)
        - 04DU9-DN (1.544 MB, D4 framing format with B8ZF coding)
        - 04DU9-1KN (1.544 MB, ESF framing format)
        - 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)
        - 04DU9-1ZN (1.544 MB, ANSI ESF and ZBTSI without line power)

        The telephone company will select the code it has available.

     -- The Service Order Code(s) (SOC): 6.0Y

     -- The required Universal Service Order Code (USOC) jack: RJ48C
   - When you request ISDN "U" Interface Service, you must provide the telephone company with
     -- The Facility Interface Code: 02IS5

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ49C
   - When you request ISDN "S/T" Interface Service, you must provide the telephone company with
     -- The Service Order Code(s) (SOC): 6.0P

     -- The make, model number, and FCC Registration number of the NT1

     Note: ISDN S/T cannot be directly connected to the network.

   - When you request Primary Rate ISDN Service, you must provide the telephone company with
     -- The Facility Interface Code: 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)

     -- The Service Order Code(s) (SOC): 6.0Y

     -- The required Universal Service Order Code (USOC) jack: RJ48C
2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
3. If the unit causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
4. If you experience trouble with the unit, please contact the Bay Networks Technical Solutions Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Bay Networks, Inc.

United States	1-800-2LAN-WAN
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-0180
5. You are required to notify the telephone company when you disconnect the unit from the network.

This equipment complies with Part 68 of FCC Rules. All direct connections to telephone network lines must be made using standard plugs and jacks compliant with FCC Part 68. Please note the following:

1. You are required to request service from the telephone company before you connect the unit to a network. When you request service, you must provide the telephone company with the following data:
   - When you request T1 Service, you must provide the telephone company with
     -- The Facility Interface Code

        Provide the telephone company with all the codes below:

        - 04DU9-BN (1.544 MB, D4 framing format)
        - 04DU9-DN (1.544 MB, D4 framing format with B8ZF coding)
        - 04DU9-1KN (1.544 MB, ESF framing format)
        - 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)
        - 04DU9-1ZN (1.544 MB, ANSI ESF and ZBTSI without line power)

        The telephone company will select the code it has available.

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ48C
   - When you request 56K/64K Service, you must provide the telephone company with
     -- The Facility Interface Code: 04DU5-56/64

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ48S
   - When you request V.34 Service, you must provide the telephone company with
     -- The required Universal Service Order Code (USOC) jack: RJ11C

     -- The make, model number, Ringer Equivalence Number (REN), and FCC Registration number of the unit

     The REN helps you determine the number of devices you can connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices should not exceed 5.0. To be certain of the number of devices you can connect to your line, you should call your local telephone company to determine the maximum REN for your calling area.
   - When you request ISDN “U” Interface Service, you must provide the telephone company with
     -- The Facility Interface Code: 02IS5

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ49C
   - When you request ISDN “S/T” Interface Service, you must provide the telephone company with
     -- The Service Order Code(s) (SOC): 6.0N

     -- The make, model number, and FCC Registration number of the NT1

     Note: ISDN S/T cannot be directly connected to the network.
   - When you request Primary Rate ISDN Service, you must provide the telephone company with
     -- The Facility Interface Code: 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ48C

2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
3. If the unit causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
4. If you experience trouble with the unit, please contact the Bay Networks Technical Solutions Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Bay Networks, Inc.

United States	1-800-2LAN-WAN
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-0180

5. You are required to notify the telephone company when you disconnect the unit from the network.

Bay Networks, Inc. Software License Agreement

NOTICE: Please carefully read this license agreement before copying or using the accompanying software or installing the hardware unit with pre-enabled software (each of which is referred to as "Software" in this Agreement). BY COPYING OR USING THE SOFTWARE, YOU ACCEPT ALL OF THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT. THE TERMS EXPRESSED IN THIS AGREEMENT ARE THE ONLY TERMS UNDER WHICH BAY NETWORKS WILL PERMIT YOU TO USE THE SOFTWARE. If you do not accept these terms and conditions, return the product, unused and in the original shipping container, within 30 days of purchase to obtain a credit for the full purchase price

1. License Grant. Bay Networks, Inc. ("Bay Networks") grants the end user of the Software ("Licensee") a personal, nonexclusive, nontransferable license: a) to use the Software either on a single computer or, if applicable, on a single authorized device identified by host ID, for which it was originally acquired; b) to copy the Software solely for backup purposes in support of authorized use of the Software; and c) to use and copy the associated user manual solely in support of authorized use of the Software by Licensee. This license applies to the Software only and does not extend to Bay Networks Agent software or other Bay Networks software products. Bay Networks Agent software or other Bay Networks software products are licensed for use under the terms of the applicable Bay Networks, Inc. Software License Agreement that accompanies such software and upon payment by the end user of the applicable license fees for such software.

2. Restrictions on use; reservation of rights. The Software and user manuals are protected under copyright laws. Bay Networks and/or its licensors retain all title and ownership in both the Software and user manuals, including any revisions made by Bay Networks or its licensors. The copyright notice must be reproduced and included with any copy of any portion of the Software or user manuals. Licensee may not modify, translate, decompile, disassemble, use for any competitive analysis, reverse engineer, distribute, or create derivative works from the Software or user manuals or any copy, in whole or in part. Except as expressly provided in this Agreement, Licensee may not copy or transfer the Software or user manuals, in whole or in part. The Software and user manuals embody Bay Networks' and its licensors' confidential and proprietary intellectual property. Licensee shall not sublicense, assign, or otherwise disclose to any third party the Software, or any information about the operation, design, performance, or implementation of the Software and user manuals that is confidential to Bay Networks and its licensors; however, Licensee may grant permission to its consultants, subcontractors, and agents to use the Software at Licensee's facility, provided they have agreed to use the Software only in accordance with the terms of this license.

3. Limited warranty. Bay Networks warrants each item of Software, as delivered by Bay Networks and properly installed and operated on Bay Networks hardware or other equipment it is originally licensed for, to function substantially as described in its accompanying user manual during its warranty period, which begins on the date Software is first shipped to Licensee. If any item of Software fails to so function during its warranty period, as the sole remedy Bay Networks will at its discretion provide a suitable fix, patch, or workaround for the problem that may be included in a future Software release. Bay Networks further warrants to Licensee that the media on which the Software is provided will be free from defects in materials and workmanship under normal use for a period of 90 days from the date Software is first shipped to Licensee. Bay Networks will replace defective media at no charge if it is returned to Bay Networks during the warranty period along with proof of the date of shipment. This warranty does not apply if the media has been damaged as a result of accident, misuse, or abuse. The Licensee assumes all responsibility for selection of the Software to achieve Licensee's intended results and for the installation, use, and results obtained from the Software. Bay Networks does not warrant a) that the functions contained in the software will meet the Licensee's requirements, b) that the Software will operate in the hardware or software combinations that the Licensee may select, c) that the operation of the Software will be uninterrupted or error free, or d) that all defects in the operation of the Software will be corrected. Bay Networks is not obligated to remedy any Software defect that cannot be reproduced with the latest Software release. These warranties do not apply to the Software if it has been (i) altered, except by Bay Networks or in accordance with its instructions; (ii) used in conjunction with another vendor's product, resulting in the defect; or (iii) damaged by improper environment, abuse, misuse, accident, or negligence. THE FOREGOING WARRANTIES AND LIMITATIONS ARE EXCLUSIVE REMEDIES AND ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Licensee is responsible for the security of

its own data and information and for maintaining adequate procedures apart from the Software to reconstruct lost or altered files, data, or programs.

4. Limitation of liability. IN NO EVENT WILL BAY NETWORKS OR ITS LICENSORS BE LIABLE FOR ANY COST OF SUBSTITUTE PROCUREMENT; SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES; OR ANY DAMAGES RESULTING FROM INACCURATE OR LOST DATA OR LOSS OF USE OR PROFITS ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THE SOFTWARE, EVEN IF BAY NETWORKS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE LIABILITY OF BAY NETWORKS RELATING TO THE SOFTWARE OR THIS AGREEMENT EXCEED THE PRICE PAID TO BAY NETWORKS FOR THE SOFTWARE LICENSE.

5. Government Licensees. This provision applies to all Software and documentation acquired directly or indirectly by or on behalf of the United States Government. The Software and documentation are commercial products, licensed on the open market at market prices, and were developed entirely at private expense and without the use of any U.S. Government funds. The license to the U.S. Government is granted only with restricted rights, and use, duplication, or disclosure by the U.S. Government is subject to the restrictions set forth in subparagraph (c)(1) of the Commercial Computer Software—Restricted Rights clause of FAR 52.227-19 and the limitations set out in this license for civilian agencies, and subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause of DFARS 252.227-7013, for agencies of the Department of Defense or their successors, whichever is applicable.

6. Use of Software in the European Community. This provision applies to all Software acquired for use within the European Community. If Licensee uses the Software within a country in the European Community, the Software Directive enacted by the Council of European Communities Directive dated 14 May, 1991, will apply to the examination of the Software to facilitate interoperability. Licensee agrees to notify Bay Networks of any such intended examination of the Software and may procure support and assistance from Bay Networks.

7. Term and termination. This license is effective until terminated; however, all of the restrictions with respect to Bay Networks' copyright in the Software and user manuals will cease being effective at the date of expiration of the Bay Networks copyright; those restrictions relating to use and disclosure of Bay Networks' confidential information shall continue in effect. Licensee may terminate this license at any time. The license will automatically terminate if Licensee fails to comply with any of the terms and conditions of the license. Upon termination for any reason, Licensee will immediately destroy or return to Bay Networks the Software, user manuals, and all copies. Bay Networks is not liable to Licensee for damages in any form solely by reason of the termination of this license.

8. Export and Re-export. Licensee agrees not to export, directly or indirectly, the Software or related technical data or information without first obtaining any required export licenses or other governmental approvals. Without limiting the foregoing, Licensee, on behalf of itself and its subsidiaries and affiliates, agrees that it will not, without first obtaining all export licenses and approvals required by the U.S. Government: (i) export, re-export, transfer, or divert any such Software or technical data, or any direct product thereof, to any country to which such exports or re-exports are restricted or embargoed under United States export control laws and regulations, or to any national or resident of such restricted or embargoed countries; or (ii) provide the Software or related technical data or information to any military end user or for any military end use, including the design, development, or production of any chemical, nuclear, or biological weapons.

9. General. If any provision of this Agreement is held to be invalid or unenforceable by a court of competent jurisdiction, the remainder of the provisions of this Agreement shall remain in full force and effect. This Agreement will be governed by the laws of the state of California.

Should you have any questions concerning this Agreement, contact Bay Networks, Inc., 4401 Great America Parkway, P.O. Box 58185, Santa Clara, California 95054-8185.

LICENSEE ACKNOWLEDGES THAT LICENSEE HAS READ THIS AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. LICENSEE FURTHER AGREES THAT THIS AGREEMENT IS THE ENTIRE AND EXCLUSIVE AGREEMENT BETWEEN BAY NETWORKS AND LICENSEE, WHICH SUPERSEDES ALL PRIOR ORAL AND WRITTEN AGREEMENTS AND COMMUNICATIONS BETWEEN THE PARTIES PERTAINING TO THE SUBJECT MATTER OF THIS AGREEMENT. NO DIFFERENT OR ADDITIONAL TERMS WILL BE ENFORCEABLE AGAINST BAY NETWORKS UNLESS BAY NETWORKS GIVES ITS EXPRESS WRITTEN CONSENT, INCLUDING AN EXPRESS WAIVER OF THE TERMS OF THIS AGREEMENT.

Contents

About This Guide

Conventions xxiv
Acronyms xxiv
Ordering Bay Networks Publications xxv
Bay Networks Customer Service xxv
How to Get Help xxvi

Chapter 1
Cable Basics

Before You Begin 1-2
How to Use This Guide 1-2
Finding Cables by Category 1-3
Finding Cables by Order Number or Description 1-4
Cable Connector Basics 1-8
Connector Terminology 1-8
Connector Types 1-9
Building Your Own Cables 1-11

Chapter 2
Console/Modem Cables

Console Interface to ASCII Terminal (Order No. 7525) 2-3
AFN/AN Console Interface to ASCII Terminal (Order No. 7526) 2-4
AT Serial Console (Order No. 7527) 2-5
Console/Modem Interface to RS-232-C Modem (Order No. 7825) 2-6
Backbone Console Interface to RS-232-C Modem (Order No. 77850) 2-7

Chapter 3
LAN Cables

Ethernet Cable (Order No. 7115) 3-3

Token Ring MAU Cable (Order No. 7125) 3-4
Token Ring MAU Cable with Ferrite Bead (Order No. 7126) 3-5
Token Ring to RJ-11 Cable (Order No. 7128) 3-6
FDDI FSD to FSD (Order No. 7135) 3-7
FDDI FSD to Straight Tip (Order No. 7136) 3-7
FDDI-type SC Duplex to Straight Tip
(Order No. 7164 for Single-Mode Cable) 3-8
FDDI-type SC Duplex to SC Duplex
(Order No. 7163 for Multimode Cable)
(Order No. 7165 for Single-Mode Cable) 3-9
ATM Cable, SC to Straight Tip MMF (Order No. 7169) 3-10

Chapter 4
HSSI Cables

HSSI DCE to DTE
(10 Ft: Order No. 7830; 50 Ft: Order No. 7831) 4-3
HSSI Crossover (Order No. 7832) 4-5

Chapter 5
E1/T1 Cables

MCE1 DB9 to Mod Jack Cable (Order No. AA0018001) 5-4
MCE1 DB9 to Unterminated Cable (Order No. AA0018002) 5-5
Quad MCT1 Cable (Order No. AA0018006) 5-6
MCE1 RJ-45 to RJ-45 Cable (Order No. AA0018014) 5-7
MCE1 RJ-45 to Unterminated Cable (Order No. AA0018015) 5-8
Quad MCT1 15-Pin to 15-Pin Crossover Cable
(Order No. AA0018021) 5-9
Quad MCT1 15-Pin to 15-Pin Straight-through Cable
(Order No. AA0018022) 5-10
MCT1 Clock Cable (Order No. 7150) 5-11
MCT1 15-Pin Loopback Connector (Order No. 7151) 5-12
MCT1 RJ-48 Loopback Connector (Order No. 7152) 5-13
MCT1 Crossover Cable (Order No. 7153) 5-14
MCT1 Loopback Cable (Order No. 7154) 5-15
MCT1 Loopback Cable (Order No. 7155) 5-16
MCT1 Straight-through Cable (Order No. 7156) 5-17
MCT1 Straight-through Cable (Order No. 7157) 5-18
MCE1 Crossover Cable (Order No. 7160) 5-19

MCE1 Straight-through Cable (Order No. 7161) 5-20
MCE1 Coaxial Cable (Order No. 7162) 5-21
MCE1 DB9 to DB15 Straight-through Cable (Order No. 7167) 5-22
MCE1 DB9 to DB15 Crossover Cable (Order No. 7168) 5-23
T1 to CSU DTE (Order No. 7401) 5-24
T1 to Customer Premise Equipment (Order No. 7415) 5-25
CSU Network Receptacle to RJ-45 (Order No. 7650) 5-26
CSU Network Receptacle to Spade Terminals (Order No. 7750) 5-27

Chapter 6
Standard Synchronous Cables

15-Pin to F X.21 Synchronous Pass-through (Order No. AA0018003) 6-4
44-Pin F X.21 Synchronous Pass-through (Order No. AA0018004) 6-6
50-Pin to F X.21 Synchronous Pass-through (Order No. AA0018005) 6-8
15-Pin to RS-530 Straight-through (Order No. AA0018011) 6-10
44-Pin to RS-530 Straight-through (Order No. AA0018012) 6-12
50-Pin to RS-530 Straight-through (Order No. AA0018013) 6-14
50-Pin to V.28 Cable (Order No. AA0018023) 6-16
15-Pin to V.35M (Order No. 7158) 6-17
44-Pin to V.35M (Order No. 7159) 6-18
15-Pin D-Sub to V.35: No DTR, for WAN (Order No. 7215) 6-20
15-Pin D-Sub to V.35 with DTR (Order No. 7216) 6-22
RS-232 Pass-through: 15-Pin to RS-232 (Order No. 7218) 6-23
V.35 Pass-through: 15-Pin to V.35 (Order No. 7219) 6-24
44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220) 6-26
15-Pin D-Sub to X.21 (Order No. 7221) 6-28
44-Pin D-Sub to X.21 (Order No. 7224) 6-29
15-Pin D-Sub to RS-232 (Order No. 7255) 6-30
15-Pin D-Sub to V.28 (Order No. 7256) 6-31
15-Pin Crossover (Order No. 7260) 6-32
15-Pin D-Sub to RS-422 (Order No. 7315) 6-34
44-Pin D-Sub to RS-422: Leased Line or V.25bis (Order No. 7318) 6-36

44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826) 6-38
RS-232 Pass-through: 44-Pin to RS-232 (Order No. 7833) 6-39
V.35 Pass-through: 44-Pin to V.35 (Order No. 7834) 6-40
V.35 Crossover: 44-Pin to 44-Pin (Order No. 7835) 6-42
V.35 Crossover: 44-Pin to 15-Pin (Order No. 7836) 6-44
44-Pin D-Sub to V.28 (Order No. 7837) 6-46
50-Pin to V.35 (Order No. 7932) 6-48
50-Pin to RS-232 (Order No. 7934) 6-50
50-Pin to X.21 (Order No. 7936) 6-51
50-Pin to RS-422 (Order No. 7937) 6-52
50-Pin to 50-Pin Crossover (Order No. 7938) 6-54
50-Pin to 15-Pin Crossover (Order No. 7939) 6-56
50-Pin to 44-Pin Crossover (Order No. 7940) 6-58
15-Pin to F RS-232 Synchronous Pass-through (Order No. 7941) 6-60
15-Pin to F V.35 Synchronous Pass-through (Order No. 7942) 6-61
44-Pin to F RS-232 Synchronous Pass-through (Order No. 7943) 6-62
44-Pin to F V.35 Synchronous Pass-through (Order No. 7944) 6-63
50-Pin to F RS-232 Synchronous Pass-through (Order No. 7945) 6-65
50-Pin to F V.35 Synchronous Pass-through (Order No. 7946) 6-66

Chapter 7
Dialup Services Cables

15-Pin D-Sub to RS-422: V.25bis (Order No. 7116) 7-3
15-Pin D-Sub to RS-422: Raise DTR (Order No. 7117) 7-5
15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118) 7-7
15-Pin D-Sub to RS-232: V.25bis (Order No. 7119) 7-8
15-Pin D-Sub to V.35: V.25bis (Order No. 7120) 7-9
15-Pin D-Sub to V.35: Raise DTR (Order No. 7121) 7-10
44-Pin D-Sub to V.35: Raise DTR (Order No. 7137) 7-11
44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138) 7-13
44-Pin D-Sub to RS-422: Raise DTR (Order No. 7139) 7-15
50-Pin to V.35 with Raise DTR (Order No. 7933) 7-17
50-Pin to RS-232 with Raise DTR (Order No. 7935) 7-19

Chapter 8
Cable Adapters

44-Pin to 15-Pin RS-232 Cable Adapter (Order No. 7122) 8-3
44-Pin to 15-Pin X.21 Cable Adapter (Order No. 7123) 8-5
44-Pin to 15-Pin V.35 Cable Adapter (Order No. 7124) 8-7
44-Pin to 15-Pin RS-422 Cable Adapter (Order No. 7131) 8-9
50-Pin to 44-Pin Cable Adapter (Order No. 7947) 8-11
50-Pin to 15-Pin V.35 Cable Adapter (Order No. 7948) 8-14
50-Pin to 15-Pin RS-422 Cable Adapter (Order No. AA0018024) 8-16

Figures

Figure 1-1. Connector Types 1-10

Tables

Table 1-1. Cable Category Locations 1-3
Table 1-2. Cables Listed by Order Number 1-4
Table 1-3. Connector Terms 1-8
Table 2-1. Console/Modem Cables 2-1
Table 3-1. Local Area Network Cables 3-1
Table 4-1. HSSI Cables 4-1
Table 5-1. E1/T1 Cables 5-1
Table 6-1. Standard Synchronous Cables 6-1
Table 7-1. Dialup Services Cables 7-1
Table 8-1. Console/Modem Cables 8-1

About This Guide

If you are responsible for installing Bay Networks® router hardware platforms, read this guide to discover how to attach the correct cables to the router you are installing. This guide provides

- Cable connector diagrams
- Pin/socket wiring configurations

If you want to	Go to
Learn basic information about cable connections and learn how to build your own cables	Chapter 1
Learn about the console/modem cables that link Bay Networks router hardware platforms to DTE and DCE devices	Chapter 2
Learn about the LAN cables that link Bay Networks router hardware platforms to other LAN devices	Chapter 3
Learn about the High-Speed Serial Interface (HSSI) cables that link Bay Networks router hardware platforms to LAN and WAN devices	Chapter 4
Learn about the cables that interconnect a T1 Framer or MCT1 link module with a Channel Service Unit (CSU) or T1 Digital Signal Cross-Connect switch (DSX-1 or DSX-2), an E1/T1 line, or an external T1 clock source	Chapter 5
Learn about the standard synchronous cables that link Bay Networks router hardware platforms to WAN devices	Chapter 6
Learn about dialup services cables necessary for linking Bay Networks router hardware platforms to WAN dial-on-demand and dial backup devices	Chapter 7
Learn about the cable and adapters that enable existing cables to connect to different ports	Chapter 8

Conventions

italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
separator (>)	Separates internal pin-to-pin wire connections. Example: Pin 7 > 19 > 20

Acronyms

ATM	asynchronous transfer mode
AUI	Attachment Unit Interface
CCITT	International Telegraph and Telephone Consultative Committee (now ITU-T)
CPE	Customer Premise Equipment
CSMA/CD	carrier sense multiple access with collision detection
CSU	channel service unit
DCE	data communications equipment
DSU	digital service unit
DTE	data terminal equipment
DTR	data terminal ready
EIA	Electronic Industries Association
FC	Fiber Channel
FDDI	Fiber Distributed Data Interface
FSD	fixed shroud duplex
HSSI	High-Speed Serial Interface
IEEE	Institute of Electrical and Electronic Engineers
LAN	local area network
MAU	media access unit/multistation access unit
PMD	Physical Medium Dependent
SC	Subscriber Connector
STP	shielded twisted pair
WAN	wide area network

Ordering Bay Networks Publications

To purchase additional copies of this document or other Bay Networks publications, order by part number from Bay Networks Press™ at the following numbers:

- Phone--U.S./Canada: 888-422-9773
- Phone--International: 510-490-4752
- FAX--U.S./Canada and International: 510-498-2609

The Bay Networks Press catalog is available on the World Wide Web at *support.baynetworks.com/Library/GenMisc*. Bay Networks publications are available on the World Wide Web at *support.baynetworks.com/Library/tpubs*.

Bay Networks Customer Service

You can purchase a support contract from your Bay Networks distributor or authorized reseller, or directly from Bay Networks Services. For information about, or to purchase a Bay Networks service contract, either call your local Bay Networks field sales office or one of the following numbers:

Region	Telephone number	Fax number
United States and Canada	800-2LANWAN; then enter Express Routing Code (ERC) 290, when prompted, to purchase or renew a service contract 508-916-8880 (direct)	508-916-3514
Europe	33-4-92-96-69-66	33-4-92-96-69-96
Asia/Pacific	61-2-9927-8888	61-2-9927-8899
Latin America	561-988-7661	561-988-7550

Information about customer service is also available on the World Wide Web at *support.baynetworks.com*.

How to Get Help

If you purchased a service contract for your Bay Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Bay Networks service program, call one of the following Bay Networks Technical Solutions Centers:

Technical Solutions Center	Telephone number	Fax number
Billerica, MA	800-2LANWAN	508-916-3514
Santa Clara, CA	800-2LANWAN	408-495-1188
Valbonne, France	33-4-92-96-69-68	33-4-92-96-69-98
Sydney, Australia	61-2-9927-8800	61-2-9927-8811
Tokyo, Japan	81-3-5402-0180	81-3-5402-0173

Chapter 1
Cable Basics

This guide provides all the information you need to find a specific cable for your Bay Networks router hardware platform. This chapter explains

- What you need to know
- How to use this guide
  - -- How to find cables by category
  - -- How to find cables by order number or description
- Some basics about cable connectors, including
  - -- Connector terminology
  - -- Basic connector types
- How to build your own cables

If you want to build a cable to meet special requirements, this guide also provides pinout information and references to the appropriate industry specification, standard, or recommendation documents. Recommended documents typically contain technical information to help you determine your requirements for cable installation path, cable type, maximum cable length, and so on.

Before You Begin

To ensure that you order, make, or use the appropriate cable for your router hardware platform, first answer the following questions:

- What is the connection category, order number, or physical description of the cable I want to find?
- What type of physical interface am I connecting to, and what type of cable connector (plug or receptacle) do I need to make this connection?

Note: Determining the connector type you need can significantly decrease the time it takes to locate the appropriate cable. For example, if you want to connect to a 44-position synchronous interface, look only for synchronous cables with 44-pin plugs.

- What type of device do I want to connect to the router hardware platform's physical interface? For example, do you want to connect a modem or a console to the router hardware platform? Each function requires a different cable, even though you connect to the same physical interface on the router hardware platform.
- What version of software is my router hardware platform using? For example, newer features such as dialup services may require special cable pin configurations to interoperate with earlier versions of Bay Networks software.

How to Use This Guide

You can find the Bay Networks cable you want by

- Cable connection category
- Cable order number or description

Finding Cables by Category

This guide separates Bay Networks cables into seven connection categories. Table 1-1 shows the chapter that contains each category.

Table 1-1. Cable Category Locations

Category	Chapter No.
Console/Modem	2
Local Area Network (LAN) - Ethernet - Token Ring - Fiber Distributed Data Interface (FDDI) - Asynchronous Transfer Mode (ATM)	3
High-Speed Serial Interface (HSSI)	4
Multichannel E1, T1, T1 Framer, and Channel Service Unit (CSU)	5
Standard Synchronous - Coaxial - Crossover and Loopback - Straight-through - Pass-through	6
Dialup Services	7
Cable Adapters	8

After determining the connection category and type of connector that you need, go to the appropriate chapter. The table at the beginning of each chapter provides additional information about each cable in that category.

Finding Cables by Order Number or Description

Table 1-2 lists the order number, a brief description, and the page number of each cable in this guide.

Table 1-2. Cables Listed by Order Number

Order No.	Physical Cable Description	Page
AA0018001	MCE1 DB9 to mod jack cable (9-pin to RJ-45)	5-4
AA0018002	MCE1 DB9 to unterminated end cable (9-pin to unterminated end)	5-5
AA0018003	X.21 synchronous pass-through (15-pin plug to X.21 receptacle)	6-4
AA0018004	X.21 synchronous pass-through (44-pin plug to X.21 receptacle)	6-6
AA0018005	X.21 synchronous pass-through (50-pin plug to X.21 receptacle)	6-8
AA0018006	Quad MCT1 clock cable	5-6
AA0018011	RS-530 straight-through cable (15-pin to RS-530 plug)	6-10
AA0018012	RS-530 straight-through cable (44-pin to RS-530 plug)	6-12
AA0018013	RS-530 straight-through cable (50-pin to RS-530 plug)	6-14
AA0018014	MCE1 RJ-45 to RJ-45	5-7
AA0018015	MCE1 RJ-45 to unterminated end cable	5-8
AA0018021	Quad MCT1 crossover cable (15-pin D-sub plug to 15-pin D-sub plug)	5-9
AA0018022	Quad MCT1 straight-through cable (15-pin D-sub plug to 15-pin D-sub plug)	5-10
AA0018023	50-pin to V.28 cable	6-16
AA0018024	50-pin to 15-pin RS-422 cable adapter	8-16
7115	15-pin Ethernet/802.3 AUI plug to 15-position Ethernet/802.3 AUI receptacle	3-3
7116	15-pin D-sub plug to RS-422 plug (V.25bis for Series 7 software)	7-3
7117	15-pin D-sub plug to RS-422 plug (raise DTR for Series 7 software)	7-5
7118	15-pin D-sub plug to RS-232-C plug (raise DTR for Series 7 software)	7-7
7119	15-pin D-sub plug to RS-232-C plug (V.25bis for Series 7 software)	7-8
7120	15-pin D-sub plug to V.35 plug (V.25bis for Series 7 software)	7-9
7121	15-pin D-sub plug to V.35 plug (raise DTR for Series 7 software)	7-10
7122	44-pin to 15-pin RS-232-C cable adapter	8-3
7123	44-pin to 15-pin X.21 cable adapter	8-5
7124	44-pin to 15-pin V.35 cable adapter	8-7

(continued)

Table 1-2. Cables Listed by Order Number *(continued)*

Order No.	Physical Cable Description	Page
7125	9-pin D-sub plug to Token Ring/802.5 MAU data connector (no ferrite bead); STP cable	3-4
7126	9-pin D-sub plug to Token Ring/802.5 MAU data connector (with ferrite bead); STP cable	3-5
7128	9-pin D-sub plug to Token Ring/802.5 RJ-11 receptacle	3-6
7131	44-pin to 15-pin RS-422 cable adapter	8-9
7135	FDDI/X3T9.5 FSD to FSD; multimode fiber cable; dual attachment to FDDI ring requires two cables	3-7
7136	FDDI FSD to bayonet (ST) connectors; multimode fiber cable; dual attachment to FDDI ring requires two cables	3-7
7137	44-pin D-sub plug to V.35 plug (raise DTR for Series 7 software)	7-11
7138	44-pin D-sub plug to RS-232-Cplug (raise DTR for Series 7 software)	7-13
7139	44-pin D-sub plug to RS-422 plug (raise DTR for Series 7 software)	7-15
7150	MCT1 clock cable (9-pin D-sub plug to 15-pin D-sub plug)	5-11
7151	MCT1 loopback plug (15-pin D-sub plug)	5-12
7152	MCT1 loopback plug (RJ-48)	5-13
7153	MCT1 crossover cable (15-pin D-sub plug to RJ-48)	5-14
7154	MCT1 loopback cable (RJ-48 to RJ-48)	5-15
7155	MCT1 loopback cable (15-pin D-sub plug to 15-pin D-sub plug)	5-16
7156	MCT1 straight-through cable RJ-48 to RJ-48	5-17
7157	MCT1 straight-through cable (15-pin D-sub plug to RJ-48)	5-18
7158	15-pin synchronous plug to V.35 plug	6-17
7159	44-pin D-sub plug to V.35 plug	6-18
7160	MCE1 crossover cable (9-pin)	5-19
7161	MCE1 straight-through cable (9-pin)	5-20
7162	MCE1 cable, 75Ω coaxial	5-21
7163	FDDI SC duplex to SC duplex connectors; multimode fiber cable; dual attachment to FDDI ring requires two cables	3-9
7164	FDDI SC duplex to bayonet (ST) connectors; single-mode fiber cable; dual attachment to FDDI ring requires two cables	3-8
7165	FDDI SC duplex to SC duplex connectors; single-mode fiber cable; dual attachment to FDDI ring requires two cables	3-9

(continued)

Table 1-2. Cables Listed by Order Number *(continued)*

Order No.	Physical Cable Description	Page
7167	MCE1 DB9 to DB15 straight-through cable	5-22
7168	MCE1 DB9 to DB15 crossover cable	5-23
7169	ATM cable, SC to ST MMF	3-10
7215	15-pin D-sub plug to V.35 plug (no DTR; for WAN connection)	6-20
7216	15-pin D-sub plug to V.35 plug (with DTR)	6-22
7218	RS-232 synchronous pass-through (15-pin synchronous plug to RS-232 plug; for DTE connection)	6-23
7219	V.35 synchronous pass-through (15-pin synchronous plug to V.35 plug; for DTE connection)	6-24
7220	44-pin D-sub plug to V.35 plug (leased line or V.25bis; for WAN connection)	6-26
7221	15-pin D-sub plug to X.21 plug (for WAN connection)	6-28
7224	44-pin D-sub plug to X.21 plug (for WAN connection)	6-29
7255	15-pin D-sub plug to RS-232-Cplug (for WAN connection)	6-30
7256	15-pin D-sub plug to V.28 plug (for WAN connection)	6-31
7260	15-pin to 15-pin synchronous crossover (for back-to-back node operation)	6-32
7315	15-pin D-sub plug to RS-422 plug (for WAN connection)	6-34
7318	44-pin D-sub plug to RS-422 plug (leased line or V.25bis; for WAN connection)	6-36
7401	15-pin T1 Framer plug (labeled DSX-1 or DSX-2) to 15-pin DTE plug (for CSU connection)	5-24
7415	15-pin T1 Framer plug (labeled DSX-1 or DSX-2) to 15-pin Customer Premise Equipment (CPE) plug	5-25
7525	25-pin D-sub plug to RS-232-C receptacle (for console interface to ASCII terminal connection)	2-3
7526	AFN/AN console cable; 9-pin D-sub plug to RS-232-C receptacle (for console interface to ASCII terminal connection)	2-4
7527	9-pin D-sub plug to RS-232-C receptacle (for console/modem connection to a console using a modem cable and a null-modem adapter)	2-5
7650	15-position CSU network receptacle to RJ-45 (for T-carrier line connection)	5-26
7750	15-position CSU network receptacle to spade terminals (for T-carrier line connection)	5-27
7825	9-pin D-sub plug to RS-232-C modem plug (for console/modem interface to dial modem connection)	2-6

(continued)

Table 1-2. Cables Listed by Order Number *(continued)*

Order No.	Physical Cable Description	Page
7826	44-pin D-sub plug to RS-232 plug (leased line or V.25bis; for WAN connection)	6-38
7830	HSSI DCE plug to DTE plug (10 ft)	4-3
7831	HSSI DCE plug to DTE plug (50 ft)	4-3
7832	HSSI crossover cable; HSSI plug to HSSI plug	4-5
7833	RS-232 synchronous pass-through (44-pin plug to RS-232 plug)	6-39
7834	V.35 synchronous pass-through (44-pin plug to V.35 plug)	6-40
7835	V.35 crossover cable (44-pin plug to 44-pin plug)	6-42
7836	V.35 crossover cable (44-pin plug to 15-pin plug)	6-44
7837	44-pin to V.28 plug (for WAN connection)	6-46
7932	50-pin to V.35 plug	6-48
7933	50-pin to V.35 with raise DTR	7-17
7934	50-pin to RS-232	6-50
7935	50-pin to RS-232-C with raise DTR	7-19
7936	50-pin to X.21	6-51
7937	50-pin to RS-422	6-52
7938	50-pin to 50-pin crossover	6-54
7939	50-pin to 15-pin crossover	6-56
7940	50-pin to 44-pin crossover	6-58
7941	15-pin to female RS-232-C synchronous pass-through	6-60
7942	15-pin to female V.35 synchronous pass-through	6-61
7943	44-pin to female RS-232-C synchronous pass-through	6-62
7944	44-pin to female V.35 synchronous pass-through	6-63
7945	50-pin to female RS-232-C synchronous pass-through	6-65
7946	50-pin to female V.35 synchronous pass-through	6-66
7947	50-pin to 44-pin cable adapter	8-11
7948	50-pin to 15-pin V.35 cable adapter	8-14
77850	25-pin D-sub plug to RS-232-C modem plug (for BLN/BCN console/modem interface to dial modem connection)	2-7

Cable Connector Basics

Before using this guide, you should be familiar with its terminology and the connector types Bay Networks provides.

Connector Terminology

This guide uses several terms to describe generically the various types of connectors and their physical/electrical attributes. Table 1-3 lists these terms and their definitions.

Table 1-3. Connector Terms

Term	Description
Pins	These are the short, rigid, lead wires protruding from a **plug**-type connector. The **pins** of a **plug** connector penetrate and make electrical contact with counterpart **sockets,** or holes, in a **receptacle**-type connector.
Sockets	These are the holes in a **receptacle**-type connector. Each hole - Accepts one counterpart **pin** of a **plug**-type connector - Completes an electrical connection to its counterpart **pin**
Plug	This type of connector provides a number of **pins** and attaches to a **receptacle**-type connector.
Receptacle	This type of connector provides a number of **sockets,** or holes, that accept the **pins** of a **plug**-type connector.
Physical interface	This is a **plug-** or **receptacle**-type connector located on the router hardware platform or on a device such as an Ethernet transceiver. The physical interface accepts an appropriate (counterpart) cable connector.
Termination	This is the connector at one end of a cable; a termination can be either a **plug-** or **receptacle**-type connector.

Connector Types

Bay Networks provides the following connector types:

- Attachment Unit Interface (AUI): A 15-pin D-type connector that connects equipment to the Ethernet network through a transceiver
- CCITT Series (V.28, V.35): CCITT-recommended V.10 (unbalanced) and V.11 (balanced) standard connectors
- DTE to DCE interface (X.21): CCITT-recommended DTE to DCE synchronous/public switched network connector
- Fiber Channel (FC): Threaded, straight-tip, coaxial or fiber optic connectors
- Fixed shroud duplex (FSD): Jack-type, dual fiber optic connector for use in FDDI networks
- Media access unit/multistation access unit (MAU): LAN wiring concentrator used in token ring networks
- Recommended Standard (RS-232-C, RS-449/RS-422): EIA standard connectors for use with DTE and DCE devices
- Registered Jack Series (RJ-45; RJ-48): 8-position, FCC-registered data plugs
- Subscriber Connector (SC) duplex: Jack-type, dual fiber optic connector for use in FDDI networks
- Spade terminals: Flat, U-shaped connectors typically used for T-carrier line connection
- Straight-tip (ST): Bayonet coaxial or fiber optic connectors

Note: Many types of fiber optic connectors include a dust cover. (Dust obstructs or attenuates optical signals entering or leaving the cable through the connector.) Be careful not to lose the dust cover when you attach a fiber optic cable connector to its counterpart connector. Replace dust covers when you detach a fiber optic cable from any local device.

Figure 1-1 shows a sample of connectors in cable assemblies for Bay Networks router hardware platforms.

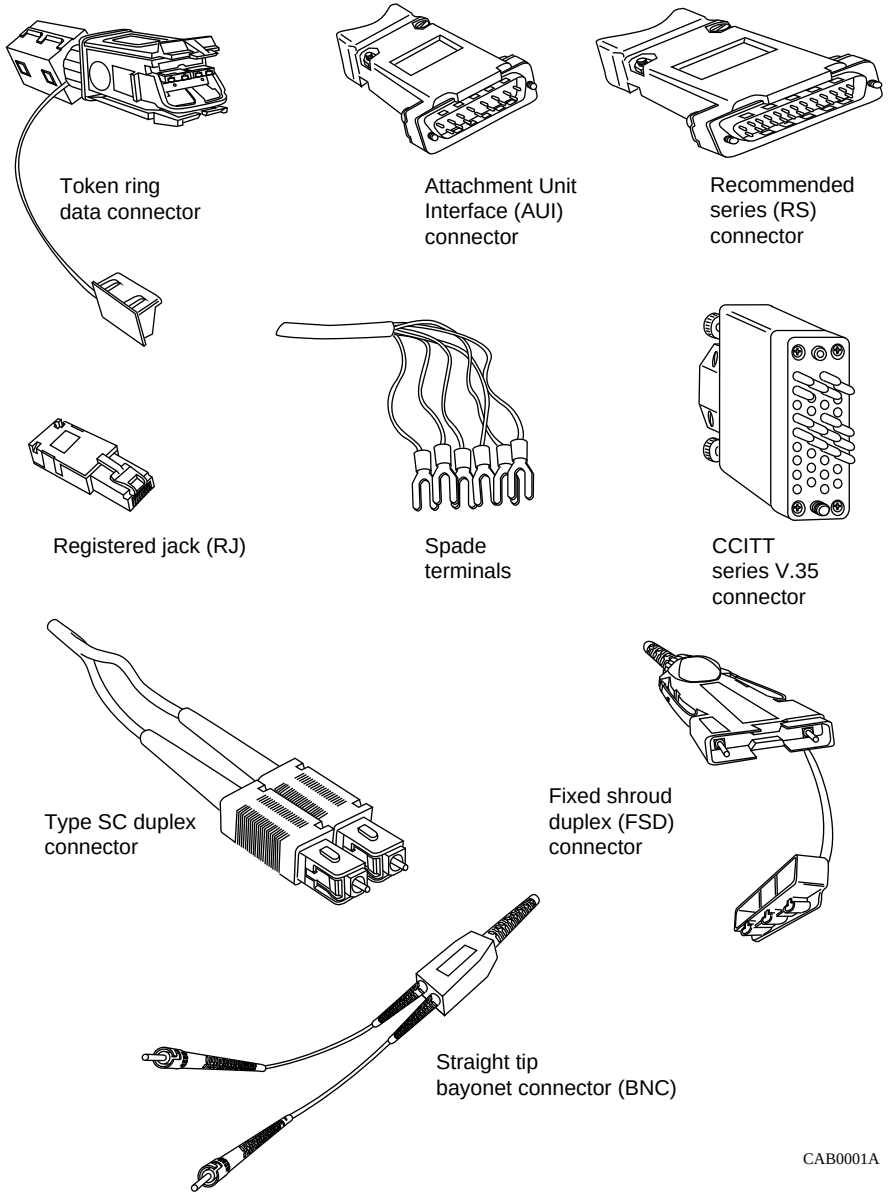


Figure 1-1. Connector Types

Building Your Own Cables

Cables that you build must comply with standard cable specifications and network requirements. Cable length, cable type, cable and connector attenuation, and other factors affect the overall performance and reliability of your network.

For example, using a cable length longer than that recommended in industry standards or interface specifications, or using a cable type that is unsuitable, considering the cable environment (temperature, electrical noise, radio-frequency [rf] emissions, and other factors) may degrade network performance and reliability.

For additional information about maximum cable length and other factors, consult the appropriate EIA, IEEE, CCITT, or ISO specification, standard, or recommendation. Some examples include

- IEEE 802.3 10BaseT Specification (10 Mb/s CSMA/CD over twisted pair)
- IEEE 802.5 Specification (Token Ring)
- X3T9.5 Single-Mode Fiber PMD Specification (FDDI)
- EIA RS-449/RS-422A Standard
- EIA RS-232-C Standard
- CCITT V.10/V.11/V.28/V.35 Recommendations
- CCITT X.21 Recommendation

See also the manufacturer's specifications for any cables or connectors you want to use. Specifications for attenuation per unit length of cable, and for connector insertion loss, are useful in helping you to determine the maximum amount of signal loss (and, therefore, the maximum distance) allowable between two directly connected network devices.

The physical interface on each device (for example, the connector on an Ethernet Link Module in a Bay Networks router hardware platform) determines which industry specification, standard, or recommendation you need to consult for guidelines on how to customize your cables.

To assist you in determining which industry document you need to consult, the description for each cable in this guide includes an "Industry Interface Type" description.

Chapter 2
Console/Modem Cables

This chapter identifies the console/modem cables that link Bay Networks router hardware platforms to DTE and DCE devices.

Table 2-1 summarizes the cables. Detailed cable illustrations and pinouts follow.

Table 2-1. Console/Modem Cables

Order No.	Length	Physical Cable Description	Connection	Page
7525	25 ft (7.63 m)	25-pin D-sub plug to RS-232-C receptacle	Console/modem interface to any ASCII terminal (for all devices except AFN and AN)	2-3
7526	25 ft (7.63 m)	AFN/AN console cable; 9-pin D-sub plug to RS-232-C receptacle	Console/modem interface to any ASCII terminal (for AFN and AN only)	2-4
7527	10 ft (3.05 m)	AT serial console cable; 9-pin D-sub plug to RS-232-C modem plug	Console/modem interface (kit contains a modem cable and a null-modem adapter) to a console	2-5
7825	25 ft (7.63 m)	9-pin D-sub plug to RS-232-C modem plug	Console/modem interface to a dial modem (for all devices except BLN, BLN-2, and BCN)	2-6
77850	15 ft (4.57 m)	25-pin D-sub plug to RS-232-C modem plug	Console/modem interface to a dial modem (for BLN, BLN-2, and BCN only)	2-7

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

  If you want to build a cable, and you want to determine the maximum cable length appropriate for that interconnection requirement, you should

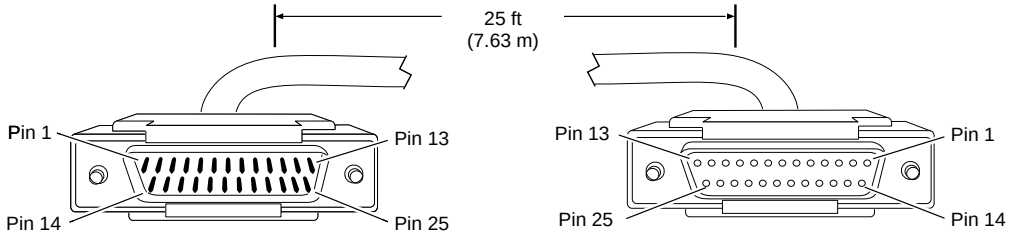
  -- Identify in this chapter a cable that satisfies your interconnection requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)
- Pinouts for each connector and all associated signals
- Internal wire connections for each termination (when applicable)

  For example, the console port to ASCII terminal cable (Order No. 7525) lists internal wire connections such as “Pin 6 > 20” in the Remote Termination column. This indicates that you must connect pin 6 to pin 20 inside the remote termination.
- Grounding arrangements that isolate the chassis from the DC ground within the cable (when applicable)

Console Interface to ASCII Terminal (Order No. 7525)

Caution: Do not use this cable to attach a modem to any Bay Networks router hardware platform. Use this cable only to attach an ASCII terminal to any Bay Networks router hardware platform except a model AN® or AFN®.



25-position D-sub plug with screw locks
(ground shield connected to backshell)

25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

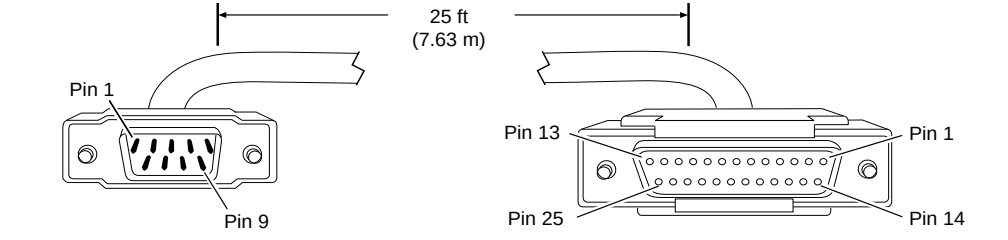
CAB0054A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	3	Receive Data
Receive Data	3	2	Transmit Data
Request to Send	4	5	Clear to Send
Clear to Send	5	4	Request to Send
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
		Pin 6 > 20	

AFN/AN Console Interface to ASCII Terminal (Order No. 7526)

Caution: Do not use this cable to attach a modem to any Bay Networks router hardware platform. Use this cable only to attach an ASCII terminal to a Bay Networks model AN or AFN platform.



9-position D-sub plug with screw locks
(ground shield connected to backshell)

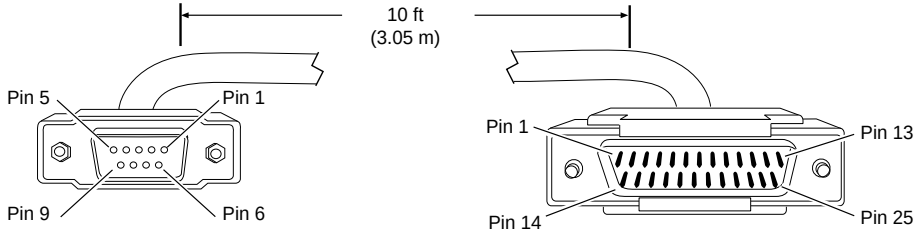
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0055A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	3	Receive Data
Receive Data	3	2	Transmit Data
Request to Send	4	5	Clear to Send
Clear to Send	5	4	Request to Send
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
		Pin 6 > 8 > 20	

AT Serial Console (Order No. 7527)



9-position D-sub receptacle with screw locks
(ground shield connected to backshell)

25-position D-sub plug with screw locks
(ground shield connected to backshell)

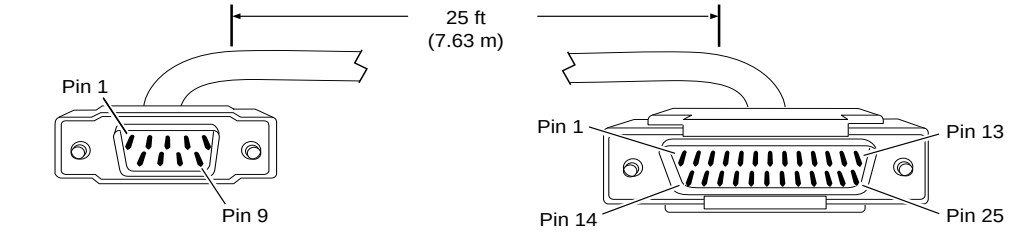
CAB0056A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Modem Termination**	
Signal	**Pin # to Pin #**		**Signal**
Data Carrier Detect	1	8	Data Carrier Detect
Transmit Data (TXD)	2	2	Transmit Data (TXD)
Receive Data (RXD)	3	3	Receive Data (RXD)
Data Set Ready	4	6	Data Set Ready
Data Terminal Ready	6	20	Data Terminal Ready
Clear to Send	7	5	Clear to Send
Request to Send	8	4	Request to Send

Console/Modem Interface to RS-232-C Modem (Order No. 7825)

Caution: This is a modem cable. Do not use this cable to attach an ASCII terminal to a Bay Networks router hardware platform. Use this cable to attach a modem to any Bay Networks router hardware platform except a model BLN®, BLN-2, or BCN®.



9-position D-sub plug with screw locks
(ground shield connected to backshell)

25-position D-sub plug with screw locks
(ground shield connected to backshell)

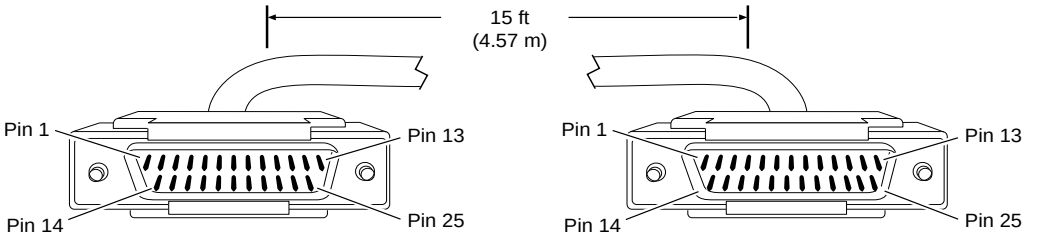
CAB0060A

Industry Interface Type: RS-232-C

Bay Networks Termination		Modem Termination	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	2	Transmit Data
Receive Data	3	3	Receive Data
Request to Send	4	4	Request to Send
Clear to Send	5	5	Clear to Send
Data Set Ready	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Carrier Detect	8	8	Carrier Detect
Data Terminal Ready	9	20	Data Terminal Ready

Backbone Console Interface to RS-232-C Modem (Order No. 77850)

Caution: This is a modem cable. Do not use this cable to attach an ASCII terminal to a Bay Networks router hardware platform. Use this cable only to attach a modem to a Bay Networks model BLN, BLN-2, or BCN platform.



25-position D-sub plug with screw locks (ground shield connected to backshell)

25-position D-sub plug with screw locks (ground shield connected to backshell)

CAB0061A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Modem Termination**	
Signal	**Pin # to Pin #**		**Signal**
Chassis Ground	1	1	Chassis Ground
Transmit Data	2	2	Transmit Data
Receive Data	3	3	Receive Data
Request to Send	4	4	Request to Send
Clear to Send	5	5	Clear to Send
Data Set Ready	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Carrier Detect	8	8	Data Carrier Detect
Data Terminal Ready	20	20	Data Terminal Ready

Chapter 3
LAN Cables

This chapter identifies the local area network (LAN) cables that link Bay Networks router hardware platforms to other LAN devices.

Table 3-1 summarizes the cables. Detailed cable illustrations and pinouts follow.

Table 3-1. Local Area Network Cables

Order No.	Length	Physical Cable Description	Connection	Page
7115	15 ft (4.57 m)	15-pin AUI plug to 15-position AUI receptacle	Bay Networks Ethernet/802.3 XCVR interface to an Ethernet AUI network connection	3-3
7125	15 ft (4.57 m)	9-pin D-sub plug to Token Ring/802.5 MAU data connector; STP cable	Bay Networks Token Ring/802.5 MAU interface to a Token Ring network connection	3-4
7126	15 ft (4.57 m)	9-pin D-sub plug to Token Ring/802.5 MAU data connector with ferrite bead; STP cable	Bay Networks Token Ring/802.5 MAU interface to a Token Ring network connection	3-5
7128	1 ft (0.3 m)	9-pin D-sub plug to RJ-11 receptacle	Bay Networks Token Ring/802.5 MAU interface to a Token Ring network connection	3-6
7135	32.81 ft (10 m)	FSD to FSD connectors; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to an FDDI FSD network connection	3-7
7136	32.81 ft (10 m)	FSD to ST connectors; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to a bayonet-type FDDI network connection	3-7

(continued)

Table 3-1. Local Area Network Cables *(continued)*

Order No.	Length	Physical Cable Description	Connection	Page
7163	9 ft (2.7 m)	FDDI SC duplex to SC duplex connectors; multimode fiber cable; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to a type SC FDDI network connection	3-9
7164	9 ft (2.7 m)	FDDI SC duplex to bayonet (ST) connectors; single-mode fiber cable; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to a type ST FDDI network connection	3-8
7165	9 ft (2.7 m)	FDDI SC duplex to SC duplex connectors; single-mode fiber cable; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to a type SC FDDI network connection	3-9
7169	9 ft (2.7 m)	ATM SC duplex to bayonet (ST) connectors; single-mode fiber cable; dual attachment to FDDI ring requires two cables	Bay Networks PHY A or PHY B interface to a type ST FDDI network connection	3-10

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front of this book.) The following sections include

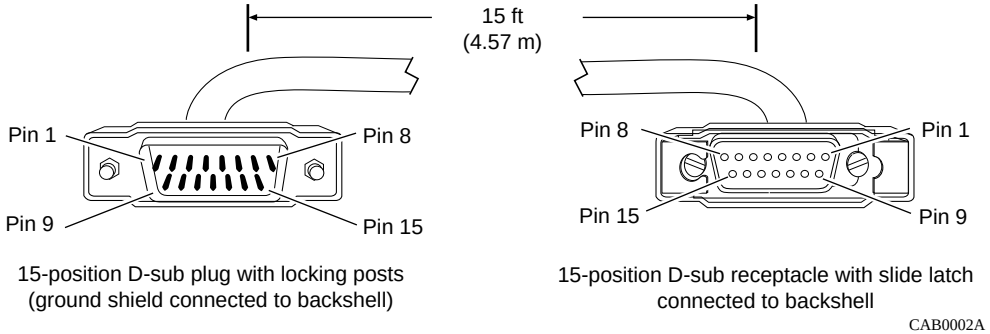
- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

  If you want to build a cable, and you want to determine the maximum cable length appropriate for that interconnection requirement, you should

  -- Identify in this chapter a cable that satisfies your interconnection requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)
- Pinouts for each connector and all associated signals (except for the FDDI cables, which have no wire connections)
- Grounding arrangements that isolate the chassis of an attached device from the DC ground within the cable (when applicable)

Ethernet Cable (Order No. 7115)



15-position D-sub plug with locking posts (ground shield connected to backshell)

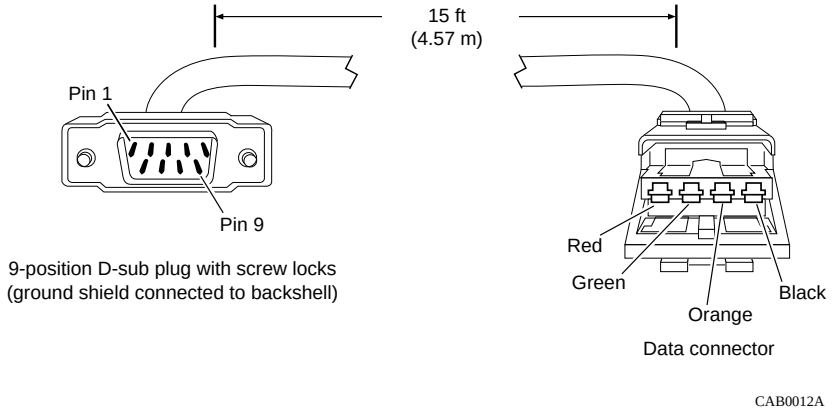
15-position D-sub receptacle with slide latch connected to backshell

CAB0002A

Industry Interface Type: Ethernet/802.3

Bay Networks Termination		**Transceiver Termination**	
Signal	**Pin # to Pin #**		**Signal**
Collision+	2	2	Collision+ (802.3 Circuit CI-A)
Transmit+	3	3	Transmit+ (802.3 Circuit DO-A)
Receive+	5	5	Receive+ (802.3 Circuit DI-A)
Voltage Common	6	6	Voltage Common (802.3 Circuit VC)
Collision-	9	9	Collision- (802.3 Circuit CI-B)
Transmit-	10	10	Transmit- (802.3 Circuit DO-B)
Receive-	12	12	Receive- (802.3 Circuit DI-B)
+12 V	13	13	+12 V (802.3 Circuit VP)

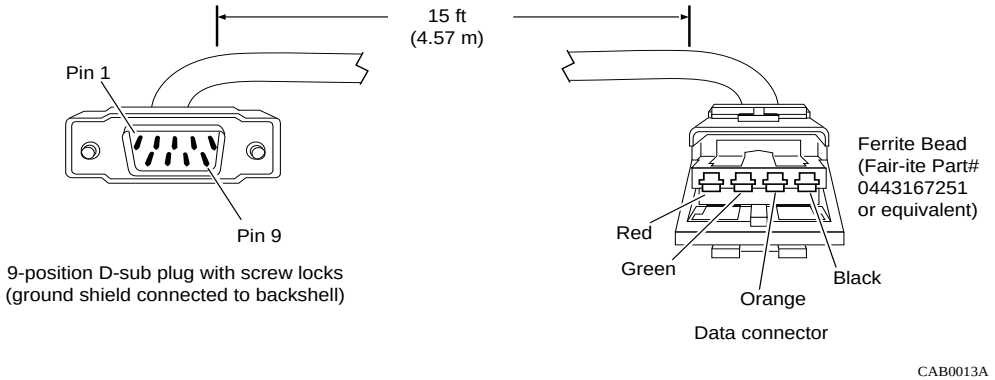
Token Ring MAU Cable (Order No. 7125)



Industry Interface Type: Token Ring/802.5

Bay Networks Termination		**Token Ring MAU**
Signal	**Pin #**	**Contact (by Wire Color)**
Receive A	1	Red
Transmit A	5	Black
Receive B	6	Green
Transmit B	9	Orange

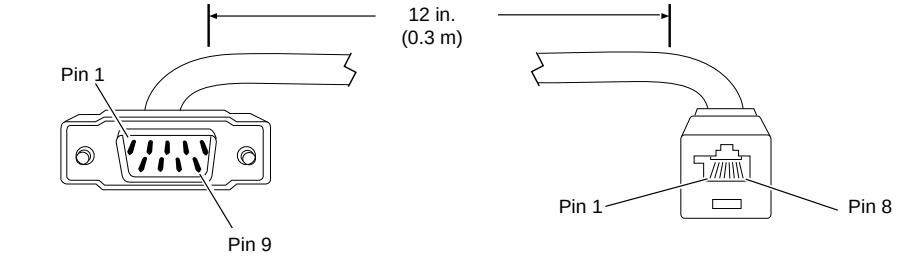
Token Ring MAU Cable with Ferrite Bead (Order No. 7126)



Industry Interface Type: Token Ring/802.5

Bay Networks Termination		**Token Ring MAU**
Signal	**Pin #**	**Contact (by Wire Color)**
Receive A	1	Red
Transmit A	5	Black
Receive B	6	Green
Transmit B	9	Orange

Token Ring to RJ-11 Cable (Order No. 7128)



9-position D-sub plug with screw locks
(ground shield connected to backshell)

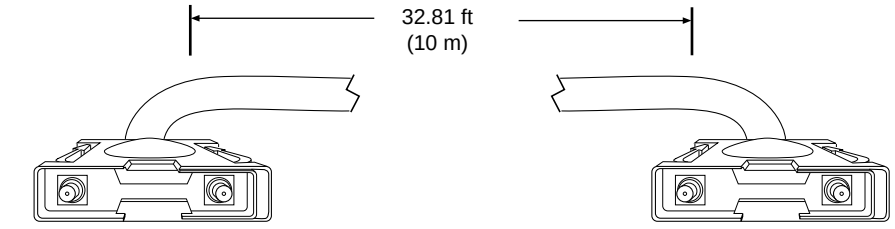
RJ-11 compatible socket

CAB0014A

Industry Interface Type: Token Ring/802.5

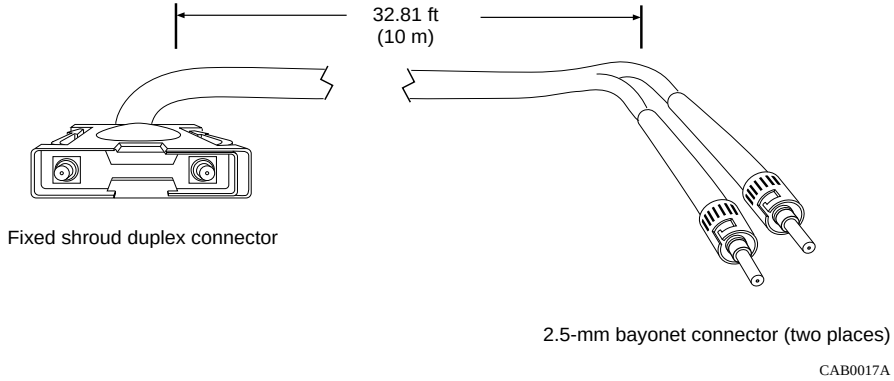
Bay Networks Termination		**RJ-11 Receptacle**	
Signal	**Pin # to Pin #**		**Signal**
Receive A	1	4	Receive Data+
Transmit A	5	3	Transmit Data+
Receive B	6	5	Receive Data-
Transmit B	9	6	Transmit Data-

FDDI FSD to FSD (Order No. 7135)



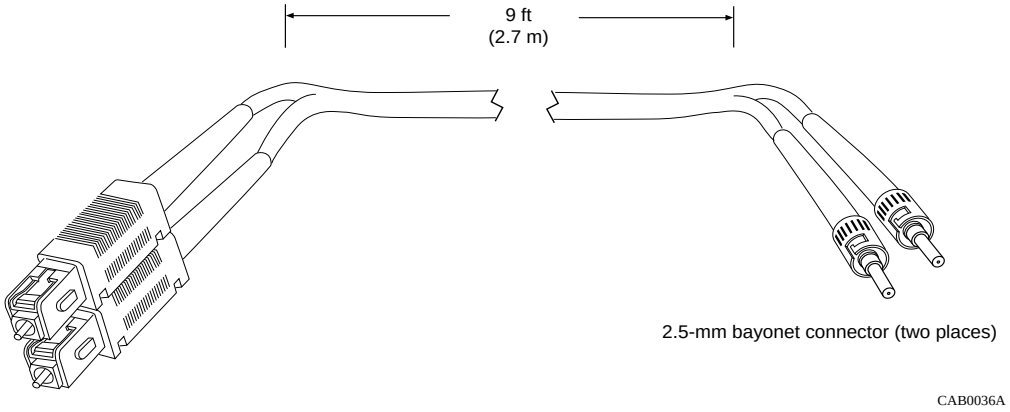
Industry Interface Type: X3T9.5 PMD/FDDI

FDDI FSD to Straight Tip (Order No. 7136)



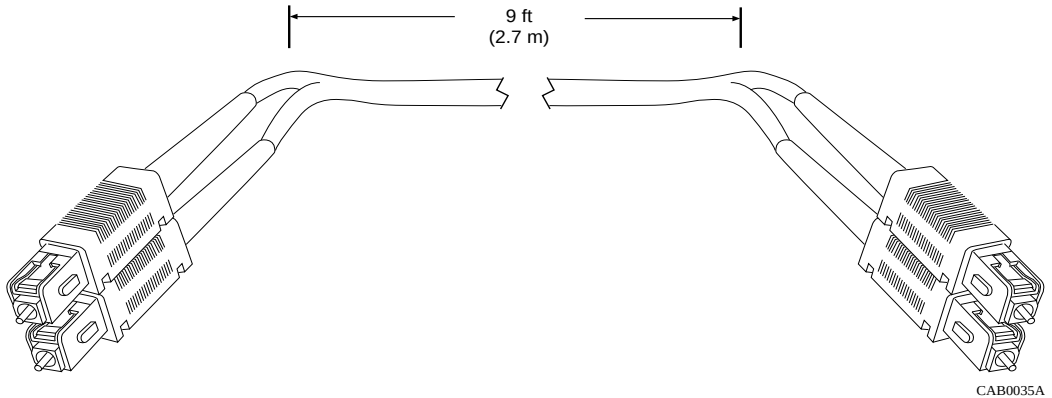
Industry Interface Type: X3T9.5 PMD/FDDI

FDDI-type SC Duplex to Straight Tip (Order No. 7164 for Single-Mode Cable)



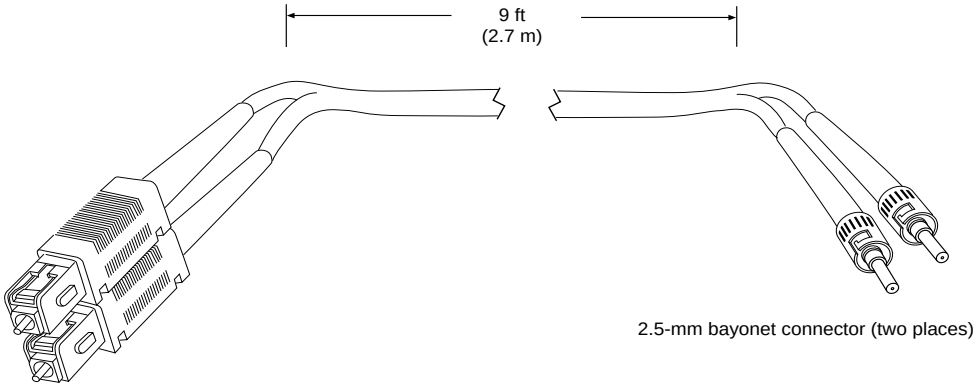
Industry Interface Type: X3T9.5 PMD/FDDI

FDDI-type SC Duplex to SC Duplex (Order No. 7163 for Multimode Cable) (Order No. 7165 for Single-Mode Cable)



Industry Interface Type: X3T9.5 PMD/FDDI

ATM Cable, SC to Straight Tip MMF (Order No. 7169)



Industry Interface Type: X3T9.5 PMD/FDDI

Chapter 4
HSSI Cables

This chapter identifies the High-Speed Serial Interface (HSSI) cables that link Bay Networks router hardware platforms to LAN and WAN devices.

Table 4-1 summarizes the cables. Detailed cable illustrations and pinouts follow.

Table 4-1. HSSI Cables

Order No.	Length	Physical Cable Description	Page
7830	10 ft (3.05 m)	HSSI DCE plug to DTE plug	4-3
7831	50 ft (15.24 m)	HSSI DCE plug to DTE plug	4-3
7832	20 ft (6.10 m)	HSSI crossover; HSSI plug to HSSI plug (This cable is intended for test environments only.)	4-5

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

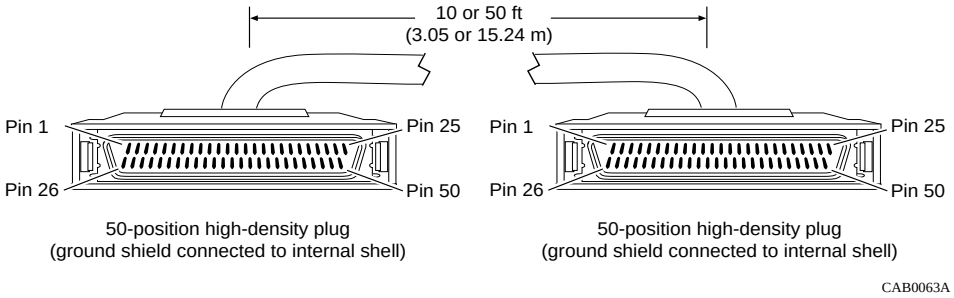
- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

  If you want to build your own cables, and you want to determine the maximum cable length appropriate for each of your interconnection requirements, you should

  -- Identify in this chapter a cable that satisfies your wiring requirement (with the exception of total cable length)

  -- Consult the HSSI specification for cable length data
- Pinouts for each connector and all associated signals
- Grounding arrangements that isolate the chassis from the DC ground within the cable

HSSI DCE to DTE
(10 Ft: Order No. 7830; 50 Ft: Order No. 7831)



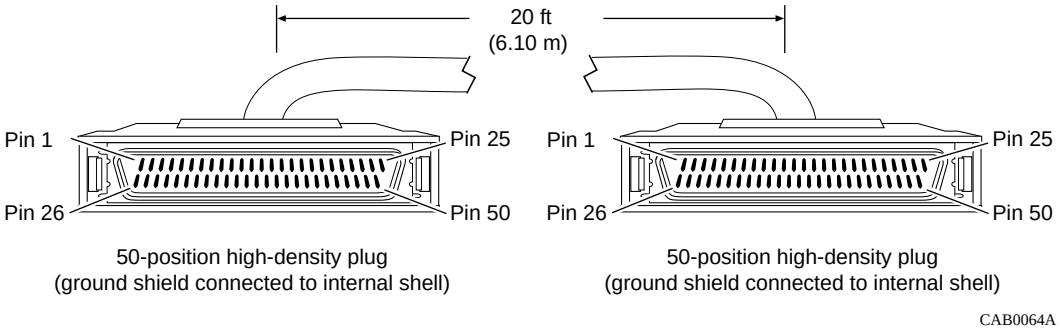
Industry Interface Type: High-Speed Serial Interface (HSSI)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	1	Signal Ground
Signal Ground	26	26	Signal Ground
Receive Timing +	2	2	Receive Timing +
Receive Timing -	27	27	Receive Timing -
DCE Available +	3	3	DCE Available +
DCE Available -	28	28	DCE Available -
Received Data +	4	4	Received Data +
Received Data -	29	29	Received Data -
Send Timing +	6	6	Send Timing +
Send Timing -	31	31	Send Timing -
Signal Ground	7	7	Signal Ground
Signal Ground	32	32	Signal Ground
DTE Available +	8	8	DTE Available +

(continued)

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
DTE Available -	33	33	DTE Available -
Terminal Timing +	9	9	Terminal Timing +
Terminal Timing -	34	34	Terminal Timing -
Loopback CKT A +	10	10	Loopback CKT A +
Loopback CKT A -	35	35	Loopback CKT A -
Send Data +	11	11	Send Data +
Send Data -	36	36	Send Data -
Loopback CKT B +	12	12	Loopback CKT B +
Loopback CKT B -	37	37	Loopback CKT B -
Signal Ground	13	13	Signal Ground
Signal Ground	38	38	Signal Ground
Signal	14	14	Signal
Signal Ground	19	19	Signal Ground
Signal Ground	44	44	Signal Ground
Signal Ground	25	25	Signal Ground
Signal Ground	50	50	Signal Ground

HSSI Crossover (Order No. 7832)



Industry Interface Type: High-Speed Serial Interface (HSSI)

This cable is intended solely for test environments; you cannot use it in production applications.Within such test environments, this cable provides a proprietary, nonstandard, back-to-back connection of Bay Networks router hardware platforms (through their HSSI ports) without intervening digital service unit (DSU) equipment.

When using the Bay Networks HSSI crossover cable, you must set the HSSI interfaces to clock internally. The data rate under internal clocking conditions must not exceed 25 megabits per second (Mb/s). (HSSI operation in a production environment allows for a DSU configuration from 300 Kb/s to 52 Mb/s.)

For additional information about enabling internal clocking, refer to *Using Technician Interface Software* (router software) or *Administration Guide* (BayStream™ software).

Bay Networks Termination A		Bay Networks Termination B	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	1	Signal Ground
Signal Ground	26	26	Signal Ground
Receive Timing +	2	9	Terminal Timing +
Receive Timing -	27	34	Terminal Timing -
DCE Available +	3	8	DTE Available +
DCE Available -	28	33	DTE Available -
Receive Data +	4	11	Send Data +
Receive Data -	29	36	Send Data -
Signal Ground	7	7	Signal Ground
Signal Ground	32	32	Signal Ground
DTE Available +	8	3	DCE Available +
DTE Available -	33	28	DCE Available -
Terminal Timing +	9	2	Receive Timing +
Terminal Timing -	34	27	Receive Timing -
Send Data +	11	4	Receive Data +
Send Data-	36	29	Receive Data -
Signal Ground	13	13	Signal Ground
Signal Ground	38	38	Signal Ground
Signal Ground	19	19	Signal Ground
Signal Ground	44	44	Signal Ground
Signal Ground	25	25	Signal Ground
Signal Ground	50	50	Signal Ground

Chapter 5
E1/T1 Cables

This chapter identfies the cables that interconnect a T1 Framer or MCT1 link module with a channel service unit (CSU) or T1 Digital Signal Cross-Connect switch (DSX-1 or DSX-2), an E1/T1 line, or an external T1 clock source.

Table 5-1 summarizes the cables. Detailed cable illustrations and pinout specifications follow.

Table 5-1. E1/T1 Cables

Order No.	Length	Physical Cable Description	Page
AA0018001	10 ft (3.05 m)	MCE1 DB9 to mod jack cable; 9-pin to RJ-45	5-4
AA0018002	10 ft (3.05 m)	MCE1 DB9 to unterminated end cable; 9-pin to unterminated end	5-5
AA0018006	6 in (0.15 m)	Quad MCT1 clock cable (15-pin D-sub plug and 9-position D-sub receptacle to 15-pin D-sub receptacle)	5-6
AA0018014	10 ft (3.05 m)	MCE1 RJ-45 to RJ-45	5-7
AA0018015	10 ft (3.05 m)	MCE1 RJ-45 to unterminated end cable	5-8
AA0018021	15 ft (4.57 m)	Quad MCT1 crossover cable (15-pin D-sub plug to 15-pin D-sub plug)	5-9
AA0018022	15 ft (4.57 m)	Quad MCT1 straight-through cable (15-pin D-sub plug to 15-pin D-sub plug)	5-10
7150	15 ft (4.57 m)	MCT1 clock cable; 9-pin D-sub plug to 15-pin D-sub plug	5-11
7151	N/A	MCT1 loopback connector; 15-pin D-sub plug	5-12
7152	N/A	MCT1 loopback connector, RJ-48	5-13
7153	15 ft (4.57 m)	MCT1 crossover cable; 15-pin D-sub plug to RJ-48	5-14
7154	15 ft (4.57 m)	MCT1 loopback cable; RJ-48 to RJ-48	5-15

(continued)

Table 5-1. E1/T1 Cables *(continued)*

Order No.	Length	Physical Cable Description	Page
7155	15 ft (4.57 m)	MCT1 loopback cable; 15-pin D-sub plug to 15-pin D-sub plug	5-16
7156	15 ft (4.57 m)	MCT1 straight-through cable; RJ-48 to RJ-48	5-17
7157	15 ft (4.57 m)	MCT1 straight-through cable; 15-pin D-sub plug to 15-pin D-sub plug	5-18
7160	10 ft (3.05 m)	MCE1 DB9 to DB9 crossover cable	5-19
7161	10 ft (3.05 m)	MCE1 DB9 to DB9 straight-through cable	5-20
7162	10 ft (3.05 m)	MCE1 cable, 75Ω coaxial	5-21
7167	10 ft (3.05 m)	MCE1 DB9 to DB15 straight-through cable	5-22
7168	10 ft (3.05 m)	MCE1 DB9 to DB15 crossover cable	5-23
7401	1 ft (0.3 m)	15-pin T1 Framer plug (labeled DSX-1 or DSX-2) to 15-pin DTE plug (for CSU connection)	5-24
7415	15 ft (4.57 m)	15-pin T1 Framer plug (labeled DSX-1 or DSX-2) to 15-pin external Customer Premise Equipment (CPE) plug	5-25
7650	50 ft (15.24 m)	15-position CSU network receptacle to RJ-45 (for T-carrier line connection)	5-26
7750	50 ft (15.24 m)	15-position CSU network receptacle to spade terminals (for T-carrier line connection)	5-27

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

  If you want to build a cable, and you want to determine the maximum cable length appropriate for each of your interconnection requirements, you should

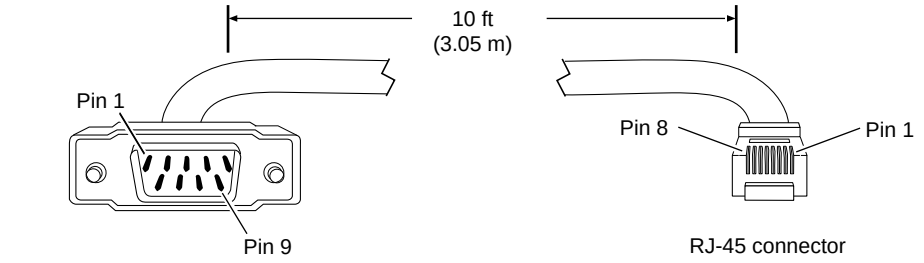
  -- Identify in this chapter a cable that satisfies your wiring requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)

- Pinouts for each connector and all associated signals
- Grounding arrangements that isolate the chassis from the DC ground within the cable

MCE1 DB9 to Mod Jack Cable (Order No. AA0018001)

Note: This cable assembly uses a 120-ohm wire.

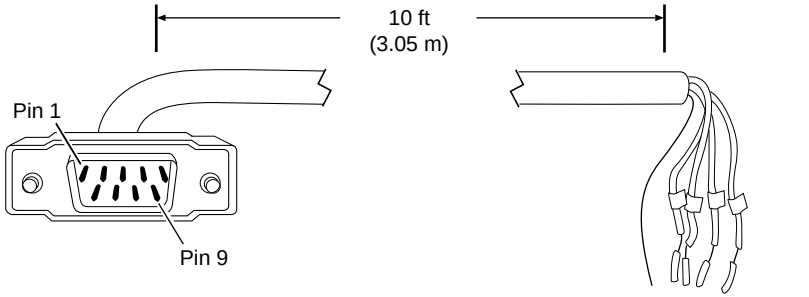


Industry Interface Type: E1

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Receive Tip	1	1	Receive Tip
Receive Ring	6	2	Receive Ring
Transmit Tip	5	4	Transmit Tip
Transmit Ring	9	5	Transmit Ring
Ground	3	3	Ground

MCE1 DB9 to Unterminated Cable (Order No. AA0018002)

Note: This cable assembly uses a 120-ohm wire.



9-position D-sub plug with screw locks
(ground shield connected to backshell)

Unterminated cable

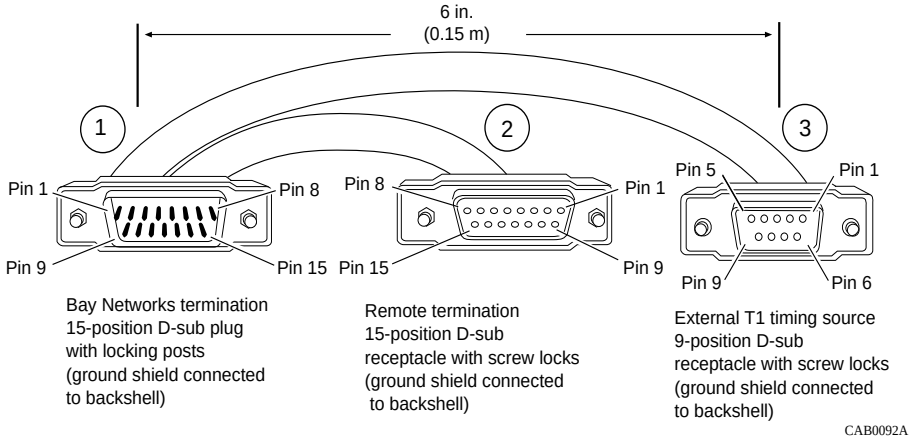
CAB0088A

Industry Interface Type: E1

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Wire Color**		**Signal**
Receive Tip	1	White/Blue	Receive Tip
Receive Ring	6	Blue/White	Receive Ring
Transmit Tip	5	White/Orange	Transmit Tip
Transmit Ring	9	Orange/White	Transmit Ring
Ground	3	Bare	Ground

Quad MCT1 Cable (Order No. AA0018006)

Note: You can use this cable assembly with COM 1 ports only.



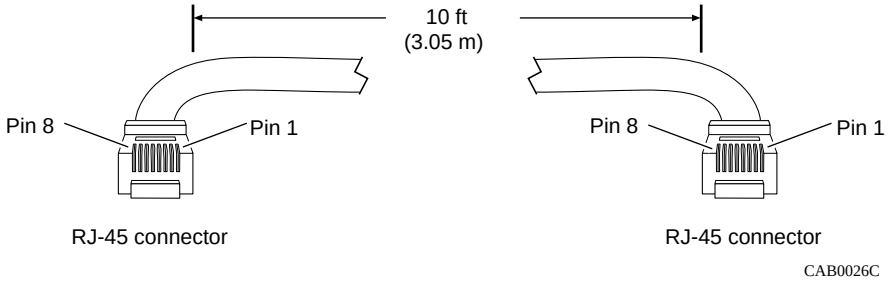
Industry Interface Type: T1/DS1 with External Clock (Input from an External T1 Timing Source)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1-1	2-1	Transmit Tip
Transmit Ring	1-9	2-9	Transmit Ring
Receive Tip	1-3	2-3	Receive Tip
Receive Ring	1-11	2-11	Receive Ring
EXT Tip	1-7	3-2	EXT Tip
EXT Ring	1-15	3-3	EXT Ring
Ground	1-2	1-4	Ground[a]
Ground	2-2	2-4	Ground[a]

a. You must configure onboard jumpers to complete this connection. Refer to the table called QMCT1 Link Module Settings in *Installing T1 Link Modules in BN Platforms*.

MCE1 RJ-45 to RJ-45 Cable (Order No. AA0018014)

Note: This cable assembly uses a 120-ohm wire.

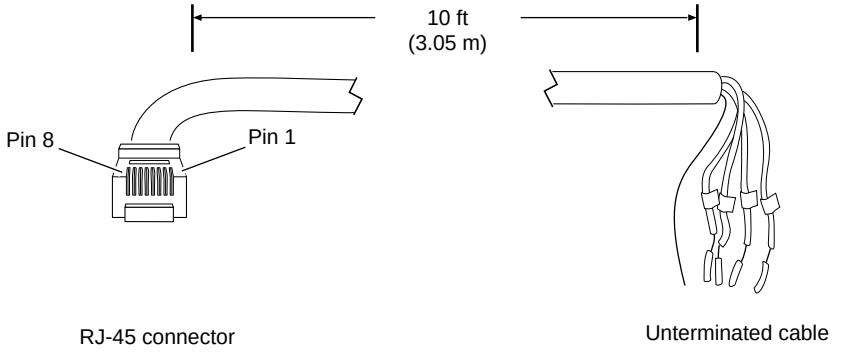


Industry Interface Type: E1

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Receive Tip	1	1	Receive Tip
Receive Ring	2	2	Receive Ring
Transmit Tip	4	4	Transmit Tip
Transmit Ring	5	5	Transmit Ring

MCE1 RJ-45 to Unterminated Cable (Order No. AA0018015)

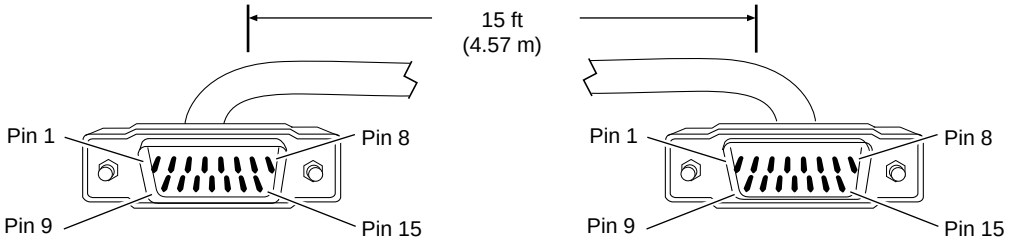
Note: This cable assembly uses a 120-ohm wire.



Industry Interface Type: E1

Bay Networks Termination		
Signal	**Pin #**	**Signal**
Receive Tip	1	Transmit Tip
Receive Ring	2	Transmit Ring
Transmit Tip	4	Transmit Tip
Transmit Ring	5	Transmit Ring

Quad MCT1 15-Pin to 15-Pin Crossover Cable (Order No. AA0018021)



15-position D-sub plug with locking posts (ground shield connected to backshell)

15-position D-sub plug with locking posts (ground shield connected to backshell)

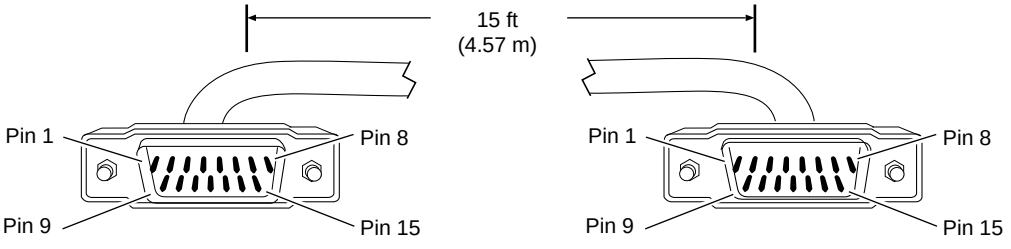
CAB0098A

Industry Interface Type: T1/DS1

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	3	Receive Tip
Transmit Ring	9	11	Receive Ring
Receive Tip	3	1	Transmit Tip
Receive Ring	11	9	Transmit Ring
Ground	2	4	Ground[a]
Ground	2	4	Ground*

a. You must configure onboard jumpers to complete this connection. Refer to the table called QMCT1 Link Module Settings in *Installing T1 Link Modules in BN Platforms*.

Quad MCT1 15-Pin to 15-Pin Straight-through Cable (Order No. AA0018022)



15-position D-sub plug with locking posts (ground shield connected to backshell)

15-position D-sub plug with locking posts (ground shield connected to backshell)

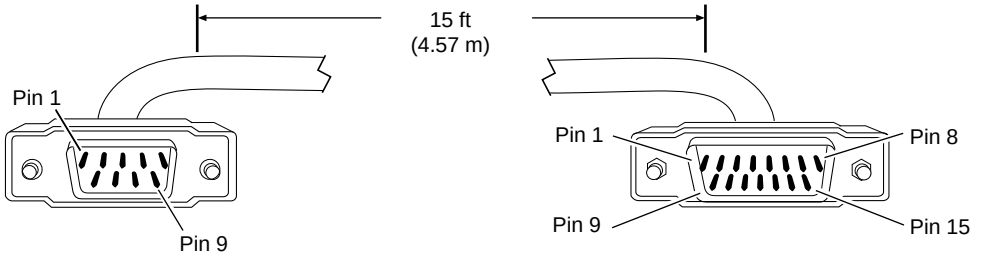
CAB0099A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	1	Transmit Tip
Transmit Ring	9	9	Transmit Ring
Receive Tip	3	3	Receive Tip
Receive Ring	11	11	Receive Ring
Ground	2	4	Ground[a]
Ground	2	4	Ground*

a. You must configure onboard jumpers to complete this connection. Refer to the table called QMCT1 Link Module Settings in *Installing T1 Link Modules in BN Platforms*.

MCT1 Clock Cable (Order No. 7150)



9-position D-sub plug with screw locks
(ground shield connected to backshell)

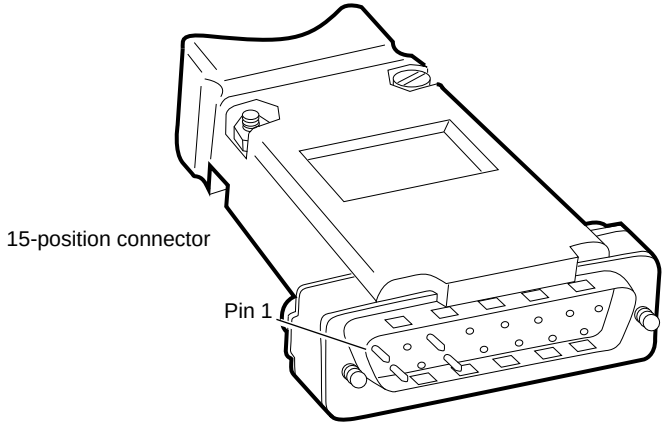
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0022A

Industry Interface Type: T1/DS1 External Clock (Input from an External T1 Timing Source)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Receive Tip	2	1	Transmit Tip
Receive Ring	3	9	Transmit Ring

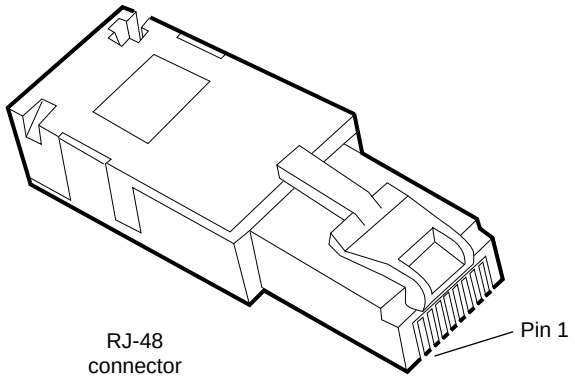
MCT1 15-Pin Loopback Connector (Order No. 7151)



CAB0023A

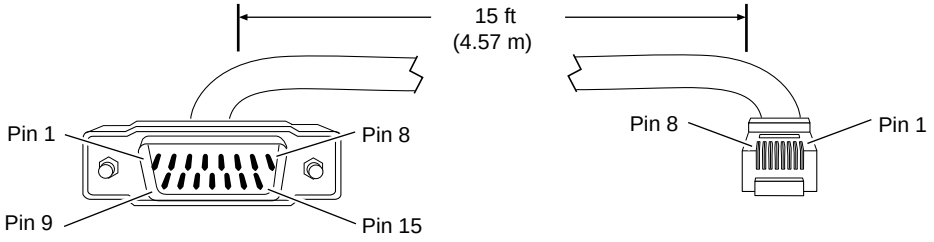
Bay Networks Termination			Remote Termination
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	3	Receive Tip
Transmit Ring	9	11	Receive Ring

MCT1 RJ-48 Loopback Connector (Order No. 7152)



Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Receive Ring	1	4	Transmit Ring
Receive Tip	2	5	Transmit Tip

MCT1 Crossover Cable (Order No. 7153)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

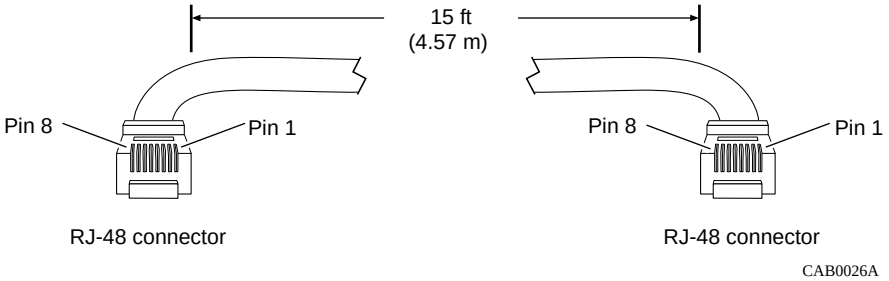
RJ-48 connector

CAB0025A

Industry Interface Type: T1/DS1

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	2	Receive Tip
Receive Tip	3	5	Transmit Tip
Transmit Ring	9	1	Receive Ring
Receive Ring	11	4	Transmit Ring

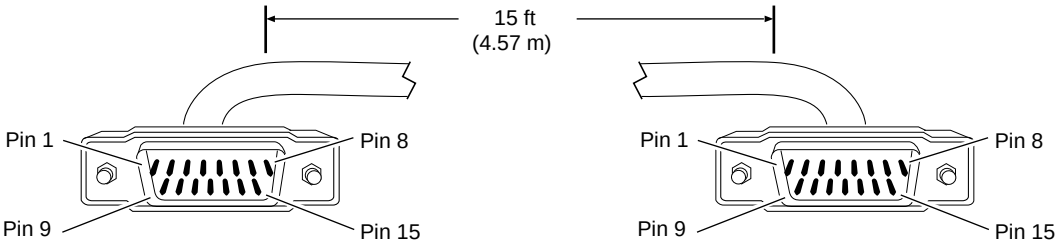
MCT1 Loopback Cable (Order No. 7154)



Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Receive Ring	1	4	Transmit Ring
Receive Tip	2	5	Transmit Tip
Transmit Ring	4	1	Receive Ring
Transmit Tip	5	2	Receive Tip

MCT1 Loopback Cable (Order No. 7155)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

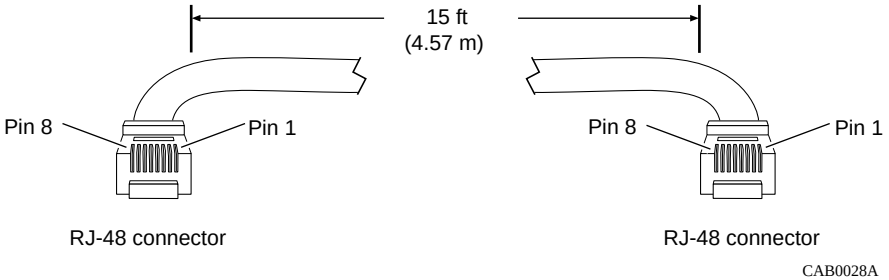
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0027A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	3	Receive Tip
Receive Tip	3	1	Transmit Tip
Transmit Ring	9	11	Receive Ring
Receive Ring	11	9	Transmit Ring

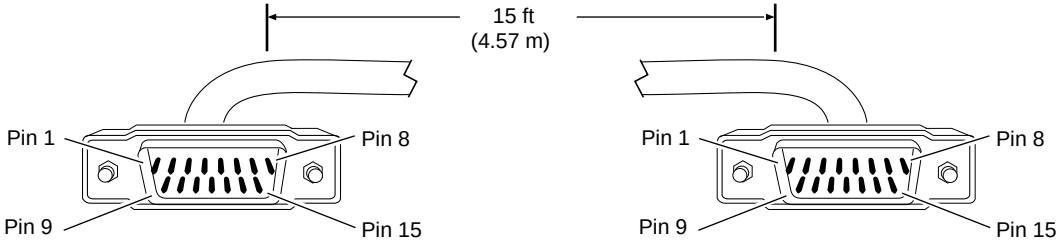
MCT1 Straight-through Cable (Order No. 7156)



Industry Interface Type: T1/DS1

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Receive Tip	1	1	Receive Tip
Receive Ring	2	2	Receive Ring
Transmit Tip	4	4	Transmit Tip
Transmit Ring	5	5	Transmit Ring

MCT1 Straight-through Cable (Order No. 7157)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

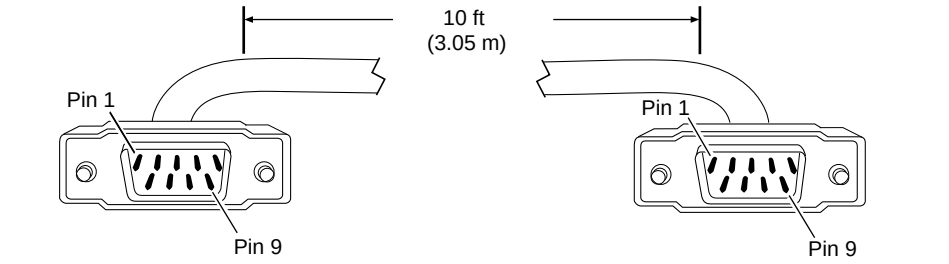
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0105A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Tip	1	1	Transmit Tip
Transmit Ring	9	9	Transmit Ring
Receive Tip	3	3	Receive Tip
Receive Ring	11	11	Receive Ring

MCE1 Crossover Cable (Order No. 7160)



9-position D-sub plug with screw locks
(ground shield connected to backshell)

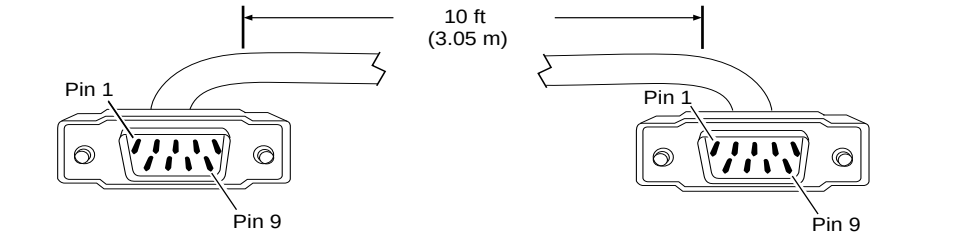
9-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0033A

Industry Interface Type: E1/G.703

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Receive A (RXA)	1	5	Transmit A (TXA)
Receive B (RXB)	6	9	Transmit B (TXB)
Transmit A (TXA)	5	1	Receive A (RXA)
Transmit B (TXB)	9	6	Receive B (RXB)
Internal Wire Connections			
Pin 3 (Shield)		Pin 3 (Shield grounded to backshell)	

MCE1 Straight-through Cable (Order No. 7161)



9-position D-sub plug with screw locks
(ground shield connected to backshell)

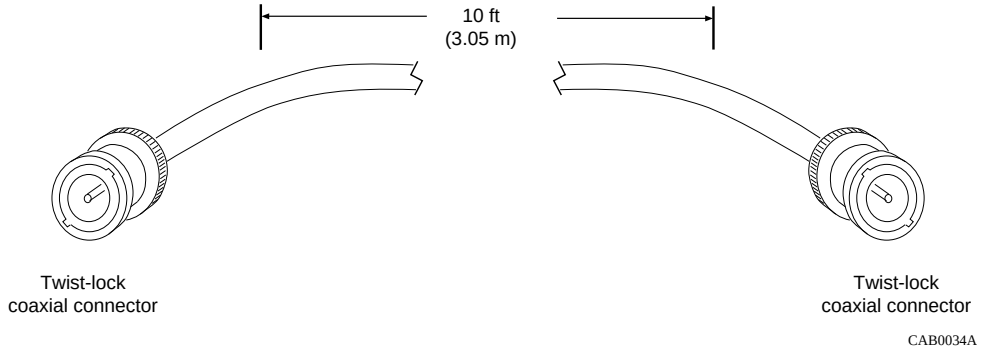
9-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0033A

Industry Interface Type: E1/G.703

Bay Networks Termination		**Remote Termination**
Signal	**Pin # to Pin #**	**Signal**
Receive A (RXA)	1	1 Receive A (RXA)
Receive B (RXB)	6	6 Receive B (RXB)
Transmit A (TXA)	5	5 Transmit A (TXA)
Transmit B (TXB)	9	9 Transmit B (TXB)
Internal Wire Connections		
Pin 3 (Shield)		Pin 3 (Shield grounded to backshell)

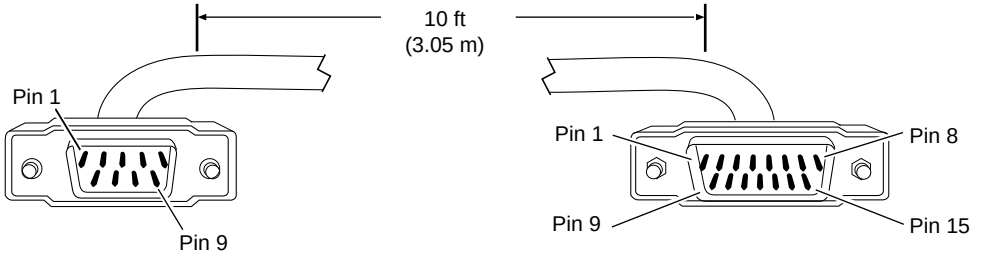
MCE1 Coaxial Cable (Order No. 7162)



Industry Interface Type: E1/G.703

MCE1 DB9 to DB15 Straight-through Cable (Order No. 7167)

Note: This cable provides a direct connection to a 15-pin D-sub port.



9-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub plug with locking posts
(ground shield connected to backshell)

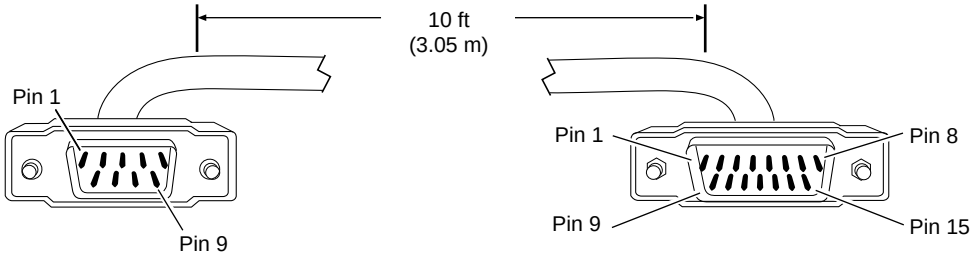
CAB0095B

Industry Interface Type: E1/G.703

Bay Networks Termination			**Remote Termination**
Signal	**Pin # to Pin #**		**Signal**
Receive A	1	3	Receive A
Receive B	6	11	Receive B
Transmit A	5	1	Transmit A
Transmit B	9	9	Transmit B
Internal Wire Connections			
Pin 3 > Shield			

MCE1 DB9 to DB15 Crossover Cable (Order No. 7168)

Note: This cable provides a crossover connection to a 15-pin D-sub port.



9-position D-sub plug with screw locks
(ground shield connected to backshell)

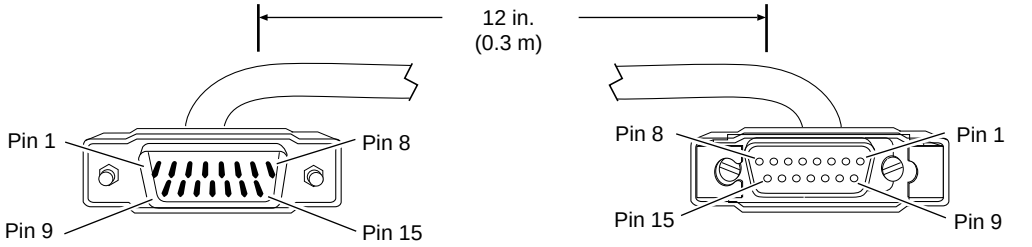
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0096B

Industry Interface Type: E1/G.703

Bay Networks Termination			**Remote Termination**
Signal	**Pin # to Pin #**		**Signal**
Receive A	1	1	Transmit A
Receive B	6	9	Transmit B
Transmit A	5	3	Receive A
Transmit B	9	11	Receive B
Internal Wire Connections			
Pin 3 > Shield			

T1 to CSU DTE (Order No. 7401)



15-position D-sub plug with locking posts (ground shield connected to backshell)

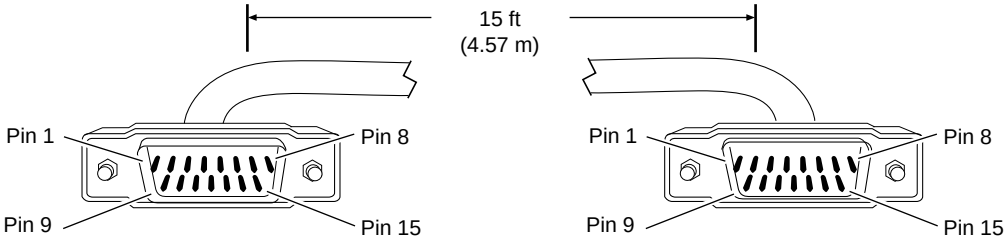
15-position D-sub receptacle with slide latch connected to backshell

CAB0052A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send +	1	1	Send +
Send -	9	9	Send -
Receive +	3	3	Receive +
Receive -	11	11	Receive -

T1 to Customer Premise Equipment (Order No. 7415)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

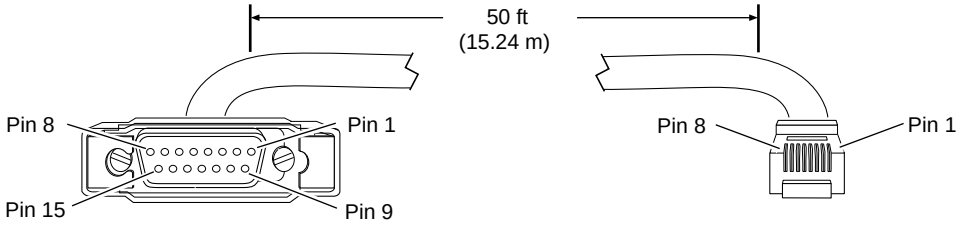
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0053A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send +	1	1	Send +
Send -	9	9	Send -
Receive +	3	3	Receive +
Receive -	11	11	Receive -

CSU Network Receptacle to RJ-45 (Order No. 7650)



15-position D-sub receptacle with slide latch connected to backshell

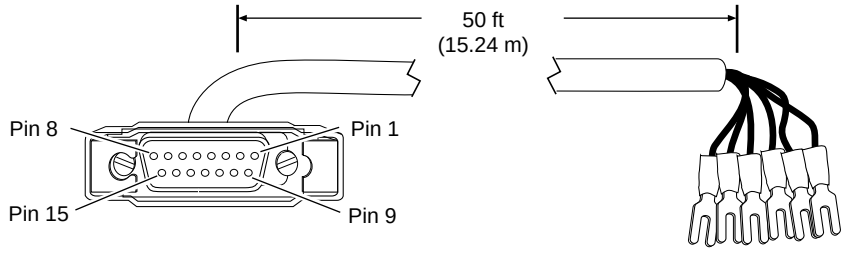
RJ-45 connector

CAB0057A

Industry Interface Type: T1/DS1

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send +	1	5	Send +
Send -	9	4	Send -
Receive +	3	2	Receive +
Receive -	11	1	Receive -

CSU Network Receptacle to Spade Terminals (Order No. 7750)



15-position D-sub receptacle with slide latch connected to backshell

Spade terminals

CAB0058A

Industry Interface Type: T1/DS1

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Signal Wire**		**Signal**
Send +	1	wire	XMIT+
Send -	9	wire	XMIT-
Receive +	3	wire	Receive +
Receive -	11	wire	Receive -
Ground	Chassis	wire	Shield
Ground	Chassis	wire	Shield

Chapter 6
Standard Synchronous Cables

This chapter identifies the standard synchronous cables that link Bay Networks router software platforms to WAN devices.

Table 6-1 summarizes the cables. Detailed cable illustrations and pinout specifications follow.

Table 6-1. Standard Synchronous Cables

Order No.	Length	Physical Cable Description	Page
AA0018003	15 ft (4.57 m)	X.21 synchronous pass-through (15-pin D-sub plug to X.21 receptacle)	6-4
AA0018004	15 ft (4.57 m)	X.21 synchronous pass-through (44-pin D-sub plug to X.21 receptacle)	6-6
AA0018005	15 ft (4.57 m)	X.21 synchronous pass-through (50-pin D-sub plug to X.21 receptacle)	6-8
AA0018011	15 ft (4.57 m)	RS-530 straight-through cable (15-pin to RS-530 plug)	6-10
AA0018012	15 ft (4.57 m)	RS-530 straight-through cable (44-pin to RS-530 plug)	6-12
AA0018013	15 ft (4.57 m)	RS-530 straight-through cable (50-pin to RS-530 plug)	6-14
AA0018023	15 ft (4.57 m)	50-pin to V.28 cable	6-16
7158	10 ft (3.05 m)	15-pin to male V.35 plug	6-17
7159	10 ft (3.05 m)	44-pin to male V.35 plug	6-18
7215	15 ft (4.57 m)	15-pin D-sub plug to V.35 plug (no DTR; for WAN connection)	6-20
7216	15 ft (4.57 m)	15-pin D-sub plug to V.35 plug (with DTR)	6-22
7218	15 ft (4.57 m)	RS-232 synchronous pass-through (15-pin D-sub plug to RS-232 plug)	6-23

(continued)

Table 6-1. Standard Synchronous Cables *(continued)*

Order No.	Length	Physical Cable Description	Page
7219	15 ft (4.57 m)	V.35 synchronous pass-through (15-pin D-sub plug to V.35 plug)	6-24
7220	15 ft (4.57 m)	44-pin D-sub plug to V.35 plug (leased line or V.25bis; for WAN connection)	6-26
7221	15 ft (4.57 m)	15-pin D-sub plug to X.21 plug (for WAN connection)	6-28
7224	15 ft (4.57 m)	44-pin D-sub plug to X.21 plug (for WAN connection)	6-29
7255	15 ft (4.57 m)	15-pin D-sub plug to RS-232 plug (for WAN connection)	6-30
7256	15 ft (4.57 m)	15-pin D-sub plug to V.28 plug (for WAN connection)	6-31
7260	15 ft (4.57 m)	15-pin to 15-pin synchronous crossover (for back-to-back node operation)	6-32
7315	15 ft (4.57 m)	15-pin D-sub plug to RS-422 plug (for WAN connection)	6-34
7318	15 ft (4.57 m)	44-pin D-sub plug to RS-422 plug (leased line or V.25bis; for WAN connection)	6-36
7826	15 ft (4.57 m)	44-pin D-sub plug to RS-232 plug (leased line or V.25bis; for WAN connection)	6-38
7833	15 ft (4.57 m)	RS-232 synchronous pass-through (44-pin D-sub plug to RS-232 plug)	6-39
7834	15 ft (4.57 m)	V.35 synchronous pass-through (44-pin D-sub plug to V.35 plug)	6-40
7835	15 ft (4.57 m)	Bay Networks V.35 crossover (44-pin D-sub plug to 44-pin D-sub plug)	6-42
7836	15 ft (4.57 m)	V.35 crossover (44-pin D-sub plug to 15-pin D-sub plug)	6-44
7837	15 ft (4.57 m)	44-pin D-sub plug to V.28 plug (for WAN connection)	6-46
7932	15 ft (4.57 m)	50-pin to V.35 plug	6-48
7934	15 ft (4.57 m)	50-pin to RS-232	6-50
7936	15 ft (4.57 m)	50-pin to X.21	6-51
7937	15 ft (4.57 m)	50-pin to RS-422	6-52
7938	15 ft (4.57 m)	50-pin to 50-pin crossover	6-54
7939	15 ft (4.57 m)	50-pin to 15-pin crossover	6-56
7940	15 ft (4.57 m)	50-pin to 44-pin crossover	6-58
7941	15 ft (4.57 m)	15-pin to female RS-232 synchronous pass-through	6-60
7942	15 ft (4.57 m)	15-pin to female V.35 synchronous pass-through	6-61

(continued)

Table 6-1. Standard Synchronous Cables *(continued)*

Order No.	Length	Physical Cable Description	Page
7943	15 ft (4.57 m)	44-pin to female RS-232 synchronous pass-through	6-62
7944	15 ft (4.57 m)	44-pin to female V.35 synchronous pass-through	6-63
7945	15 ft (4.57 m)	50-pin to female RS-232 synchronous pass-through	6-65
7946	15 ft (4.57 m)	50-pin to female V.35 synchronous pass-through	6-66

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

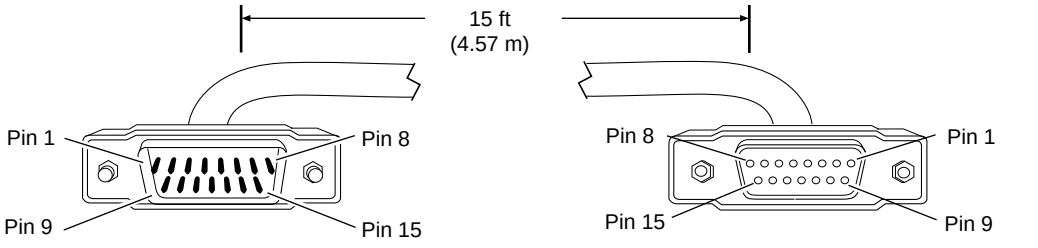
  If you want to build a cable, and you want to determine the maximum cable length appropriate for each of your interconnection requirements, you should

  -- Identify in this chapter a cable that satisfies your wiring requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)
- Pinouts for each connector and all associated signals
- Wire jumper identification for each connector (when applicable)

  For example, the Sync to V.35 cable (Order No. 7215) lists internal wire connections (Pin 1 > 7) in the Bay Networks Termination column. This indicates that you must connect pin 1 to pin 7 inside the Bay Networks connector.
- Grounding arrangements that isolate the chassis from the DC ground within the cable

15-Pin to F X.21 Synchronous Pass-through (Order No. AA0018003)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

15-position D-sub receptacle with M-3 screw posts
(ground shield connected to backshell)

CAB0089A

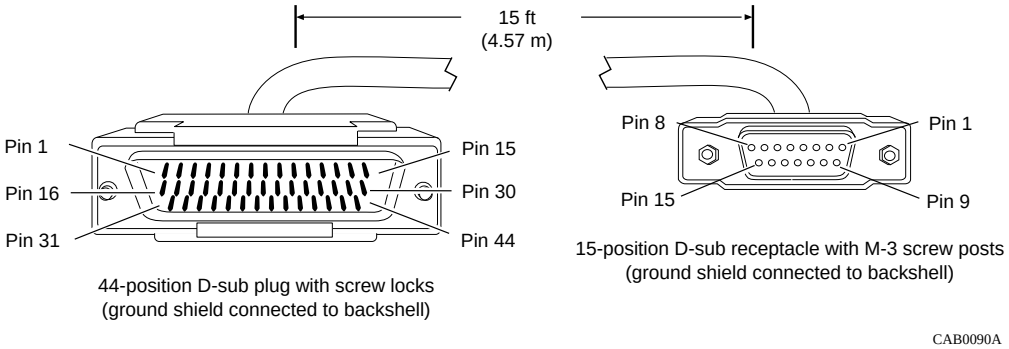
Industry Interface Type: X.21

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data +	2	4	Receive Data A
Transmit Data -	3	11	Receive Data B
Timing +	4	6	Timing A
Timing -	5	13	Timing B
Request to Send +	6	5	Indication A
Data Carrier Detect -	9	10	Control B
Data Carrier Detect +	10	3	Control A
Receive Data -	13	9	Transmitted Data B
Receive Data +	14	2	Transmitted Data A
Request to Send -	15	12	Indication B
Frame Ground	1	1	Frame Ground
Internal Wire Connections			
		Pin 6 > 7 (X A)	
		Pin 13 > 14 (X B)	

Note: You must move Jumpers A-E to the X.21 (2-3) position to support this interface.

44-Pin F X.21 Synchronous Pass-through (Order No. AA0018004)

Note: This cable provides you with a female termination as a DCE device.



44-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub receptacle with M-3 screw posts
(ground shield connected to backshell)

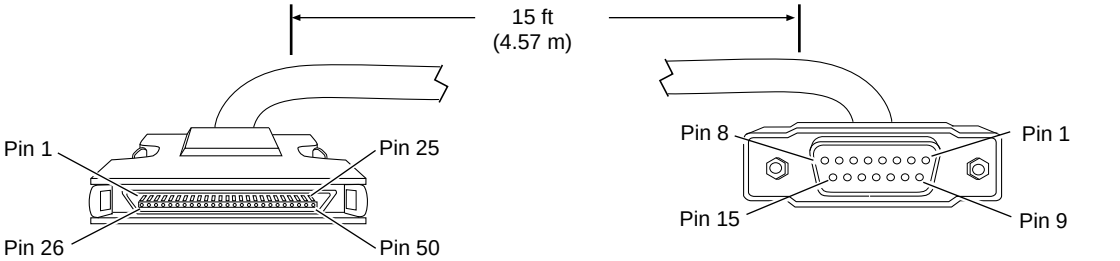
CAB0090A

Industry Interface Type: X.21

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	4	Receive Data A
Send Data -	16	11	Receive Data B
Receive Data +	3	2	Transmitted Data A
Receive Data -	17	9	Transmitted Data B
Request to Send +	4	5	Indication A
Request to Send -	18	12	Indication B
Data Carrier Detect +	9	3	Control A
Data Carrier Detect -	23	10	Control B
Transmitter Timing +	12	6	Timing A
Transmitter Timing -	26	13	Timing B
Frame Ground	1	1	Frame Ground
Signal Ground	7	8	Signal Ground
Internal Wire Connections			
Pin 12 > 10 (ST+)		Pin 6 > 7 (X A)	
Pin 26 > 24 (ST-)		Pin 13 > 14 (X B)	
Pin 14 > 15			
Pin 28 > 30			
Pin 41 > 43			

50-Pin to F X.21 Synchronous Pass-through (Order No. AA0018005)

Note: This cable provides you with a female termination as a DCE device.



50-position 0.8-mm plug
(ground shield connected to internal shell)

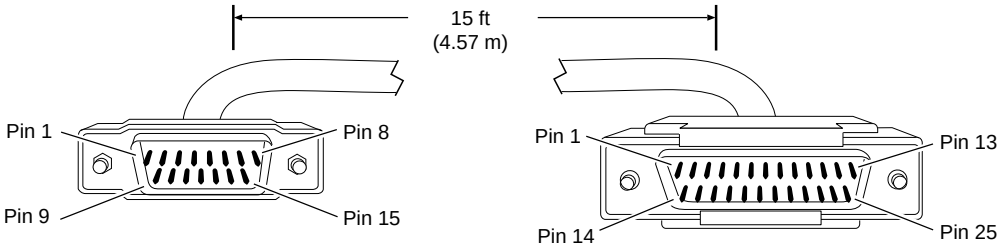
15-position D-sub receptacle with M-3 screw posts
(ground shield connected to backshell)

CAB0091A

Industry Interface Type: X.21

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	4	Receive Data A
Send Data -	27	11	Receive Data B
Receive Data +	3	2	Transmitted Data A
Receive Data -	28	9	Transmitted Data B
Request to Send +	4	5	Indication A
Request to Send -	29	12	Indication B
Data Carrier Detect +	9	3	Control A
Data Carrier Detect -	34	10	Control B
Transmitter Timing +	12	6	Timing A
Transmitter Timing -	37	13	Timing B
Frame Ground	1	1	Frame Ground
Signal Ground	7	8	Signal Ground
Internal Wire Connections			
Pin 12 > 10 (ST+)		Pin 6 > 7 (X A)	
Pin 37 > 35 (ST-)		Pin 13 > 14 (X B)	
Pin 14 > 15			
Pin 38 > 40			
Pin 46 > 48			

15-Pin to RS-530 Straight-through (Order No. AA0018011)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

25-position D-sub plug with screw locks
(ground shield connected to backshell)

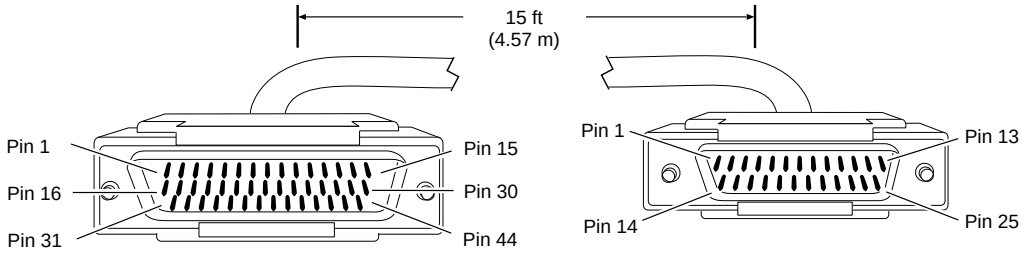
CAB0093A

Industry Interface Type: RS-530

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Transmitted Data A
Send Data -	3	14	Transmitted Data B
Receive Data +	14	3	Receive Data A
Receive Data -	13	16	Receive Data B
Request to Send +	6	4	Request to Send A
Request to Send -	15	19	Request to Send B
Clear to Send +	8	5	Clear to Send A
Clear to Send -	7	13	Clear to Send B
Data Carrier Detect +	10	8	Receive Line Signal Detect A
Data Carrier Detect -	9	10	Receive Line Signal Detect B
Send Timing +	4	15	Transmitter Signal Element Timing (DCE) A
Send Timing -	5	12	Transmitter Signal Element Timing (DCE) B
Receive Timing +	12	17	Receiver Signal Element Timing (DCE) A
Receive Timing -	11	9	Receiver Signal Element Timing (DCE) B
Signal Ground	1	7	Signal Ground

Note: You must move Jumpers B and C to the X.21 (2-3) position to support this interface.

44-Pin to RS-530 Straight-through (Order No. AA0018012)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

25-position D-sub plug with screw locks
(ground shield connected to backshell)

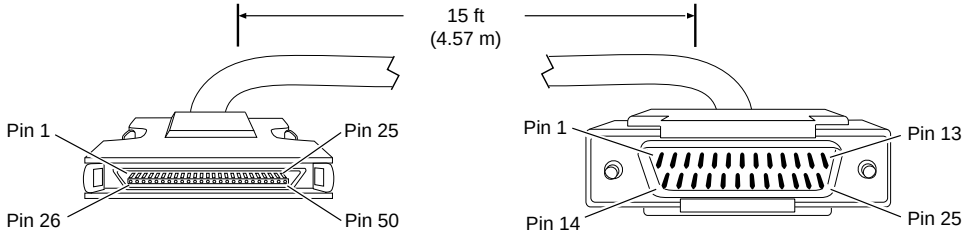
CAB0094A

Industry Interface Type: RS-530

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Transmitted Data A
Send Data -	16	14	Transmitted Data B
Receive Data +	3	3	Receive Data A
Receive Data -	17	16	Receive Data B
Request to Send +	4	4	Request to Send A
Request to Send -	18	19	Request to Send B
Clear to Send +	5	5	Clear to Send A
Clear to Send -	19	13	Clear to Send B
Data Set Ready +	6	6	DCE Ready A
Data Set Ready -	20	22	DCE Ready B
Data Terminal Ready +	8	20	DTE Ready A
Data Terminal Ready -	22	23	DTE Ready B
Data Carrier Detect +	9	8	Receive Line Signal Detect A
Data Carrier Detect -	23	10	Receive Line Signal Detect B
Send Timing +	10	15	Transmitter Signal Element Timing (DCE) A
Send Timing -	24	12	Transmitter Signal Element Timing (DCE) B

Bay Networks Termination			Remote Termination
Signal	**Pin # to Pin #**		**Signal**
Receive Timing +	11	17	Receiver Signal Element Timing (DCE) A
Receive Timing -	25	9	Receiver Signal Element Timing (DCE) B
Transmitter Timing +	12	24	Transmitter Signal Element Timing (DTE) A
Transmitter Timing -	26	11	Transmitter Signal Element Timing (DTE) B
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 13 > 28			
Pin 14 > 29			
Pin 41 > 43			

50-Pin to RS-530 Straight-through (Order No. AA0018013)

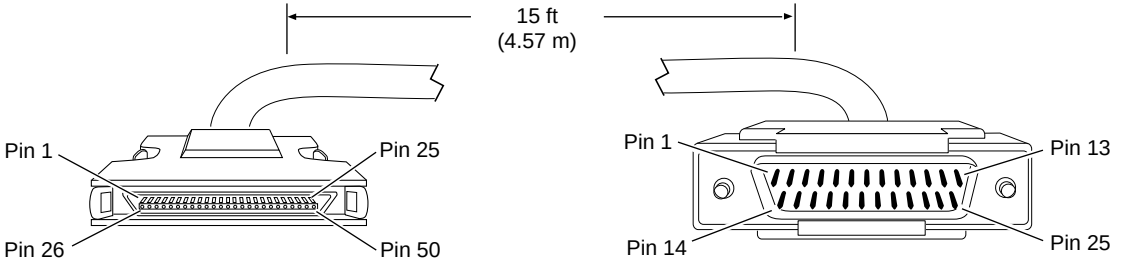


Industry Interface Type: RS-530

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Transmitted Data A
Send Data -	27	14	Transmitted Data B
Receive Data +	3	3	Receive Data A
Receive Data -	28	16	Receive Data B
Request to Send +	4	4	Request to Send A
Request to Send -	29	19	Request to Send B
Clear to Send +	5	5	Clear to Send A
Clear to Send -	30	13	Clear to Send B
Data Set Ready +	6	6	DCE Ready A
Data Set Ready -	31	22	DCE Ready B
Data Terminal Ready +	8	20	DTE Ready A
Data Terminal Ready -	33	23	DTE Ready B
Data Carrier Detect +	9	8	Receive Line Signal Detect A
Data Carrier Detect -	34	10	Receive Line Signal Detect B
Send Timing +	10	15	Transmitter Signal Element Timing (DCE) A
Send Timing -	35	12	Transmitter Signal Element Timing (DCE) B

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Receive Timing +	11	17	Receiver Signal Element Timing (DCE) A
Receive Timing -	36	9	Receiver Signal Element Timing (DCE) B
Transmitter Timing +	12	24	Transmitter Signal Element Timing (DTE) A
Transmitter Timing -	37	11	Transmitter Signal Element Timing (DTE) B
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 13 > 38			
Pin 14 > 39			
Pin 46 > 48			

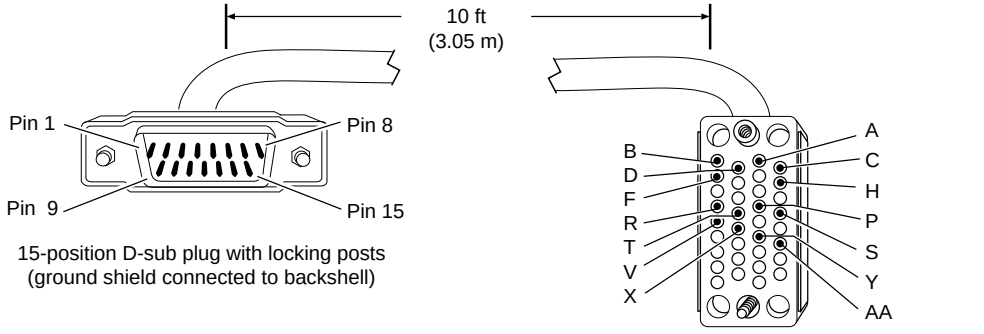
50-Pin to V.28 Cable (Order No. AA0018023)



Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Internal Wire Connections			
Pin 7 > 30 > 31 > 34			
Pin 13 > 38			
Pin 14 > 39			

15-Pin to V.35M (Order No. 7158)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

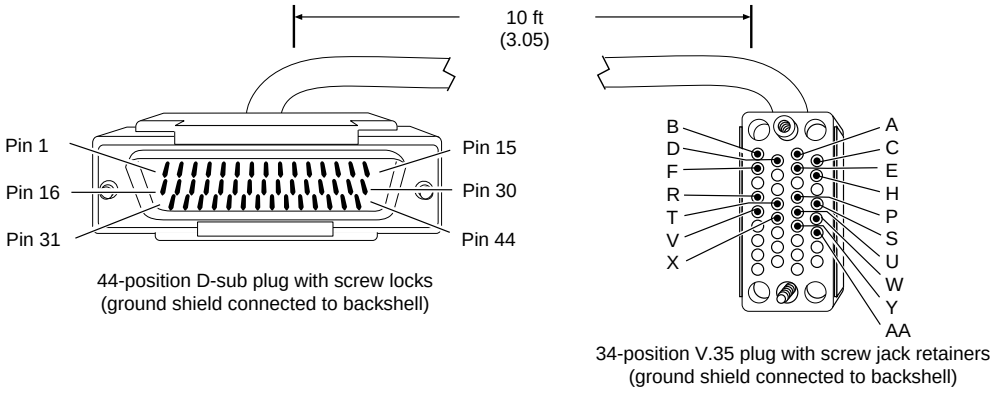
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0030A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data (Signal A)
Send Data -	3	S	Send Data (Signal B)
Serial Clock Transmit +	4	Y	Serial Clock Transmit (Signal A)
Serial Clock Transmit -	5	AA	Serial Clock Transmit (Signal B)
Request to Send +	6	C	Request to Send
Clear to Send +	8	D	Clear to Send
Data Carrier Detect +	10	F	Data Carrier Detect
Serial Clock Receive -	11	X	Serial Clock Receive (Signal B)
Serial Clock Receive +	12	V	Serial Clock Receive (Signal A)
Receive Data -	13	T	Receive Data (Signal B)
Receive Data +	14	R	Receive Data (Signal A)
Internal Wire Connections			
Pin 1 > 7		Pin C > H	

44-Pin to V.35M (Order No. 7159)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

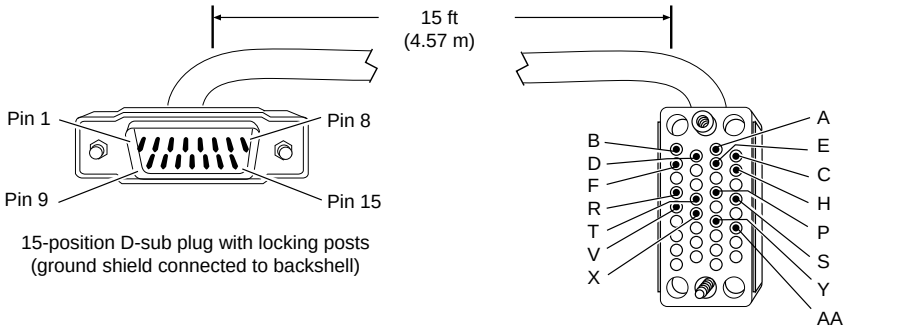
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0031B

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	F	Data Carrier Detect
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

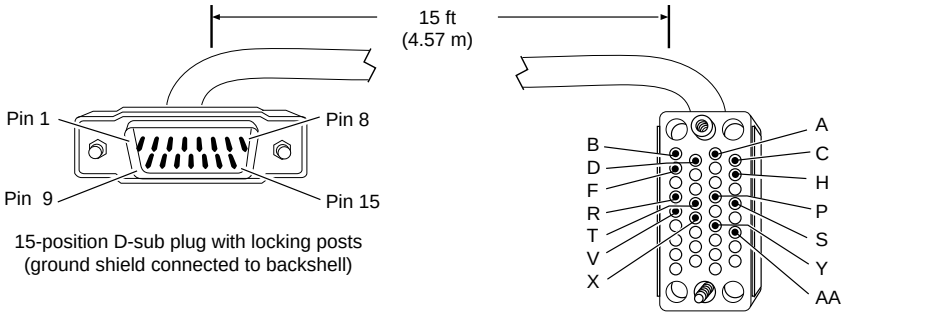
15-Pin D-Sub to V.35: No DTR, for WAN (Order No. 7215)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Serial Clock Transmit A
Serial Clock Transmit -	5	AA	Serial Clock Transmit B
Request to Send +	6	C	Request to Send
Clear to Send +	8	D	Clear to Send
Data Carrier Detect +	10	F	Data Carrier Detect
Serial Clock Receive -	11	X	Serial Clock Receive B
Serial Clock Receive +	12	V	Serial Clock Receive A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Data Set Ready +	15	E	Data Set Ready
Internal Wire Connections			
Pin 1 > 7			

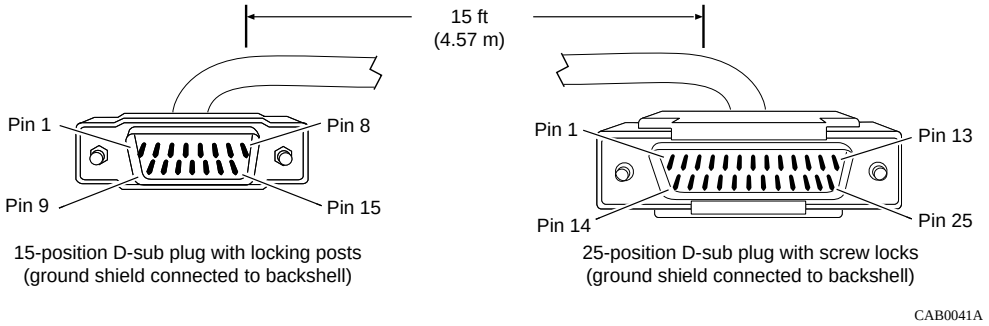
15-Pin D-Sub to V.35 with DTR (Order No. 7216)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Serial Clock Transmit A
Serial Clock Transmit -	5	AA	Serial Clock Transmit B
Request to Send +	6	C	Request to Send
Clear to Send ++	8	D	Clear to Send
Data Carrier Detect +	10	F	Data Carrier Detect
Serial Clock Receive -	11	X	Serial Clock Receive B
Serial Clock Receive +	12	V	Serial Clock Receive A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7		Pin C > H	

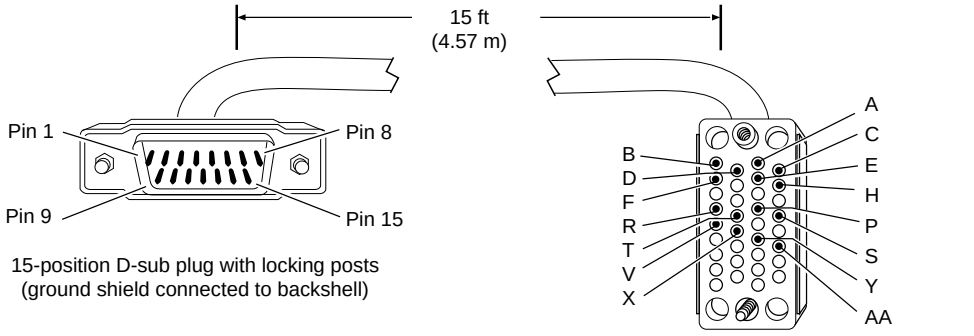
RS-232 Pass-through: 15-Pin to RS-232 (Order No. 7218)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	3	Received Data
Transmit Clock	4	15	Transmit Clock
Data Set Ready	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Clear to Send
Receive Clock	12	17	Receive Clock
Received Data	14	2	Transmitted Data
Internal Wire Connections			
Pin 1 > 7 > 9		Pin 4 > 5	
Pin 6 > 8		Pin 6 > 20	
Pin 3 > 4 >12			

V.35 Pass-through: 15-Pin to V.35 (Order No. 7219)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

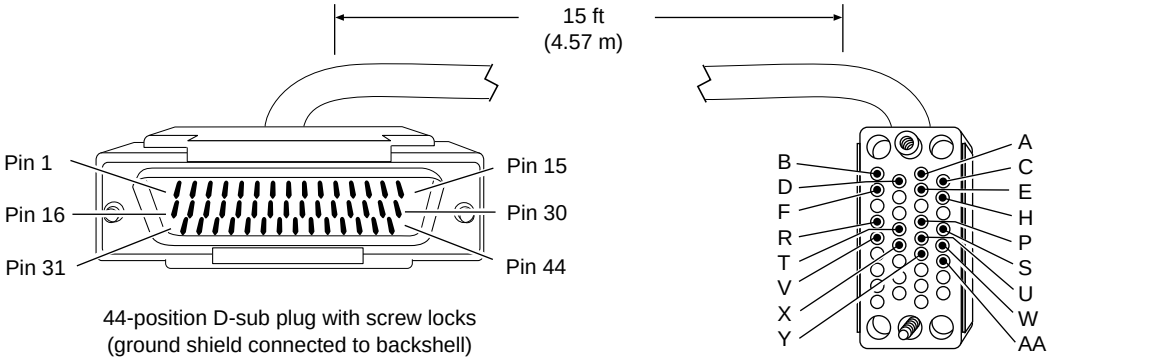
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0042A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Transmit Data +	2	R	Receive Data A
Transmit Data -	3	T	Receive Data B
Serial Clock Transmit +	4	Y	Serial Clock Transmit A
Serial Clock Transmit -	5	AA	Serial Clock Transmit B
Request to Send	6	F	Data Carrier Detect
Data Carrier Detect	10	D	Clear to Send
Serial Clock Receive -	11	X	Serial Clock Receive B
Serial Clock Receive +	12	V	Serial Clock Receive A
Receive Data -	13	S	Transmit Data B
Receive Data +	14	P	Transmit Data A
Internal Wire Connections			
Pin 6 > 8		Pin C > D	
Pin 4 > 12		Pin E > H	
Pin 5 > 11			
Pin 1 > 7			

44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

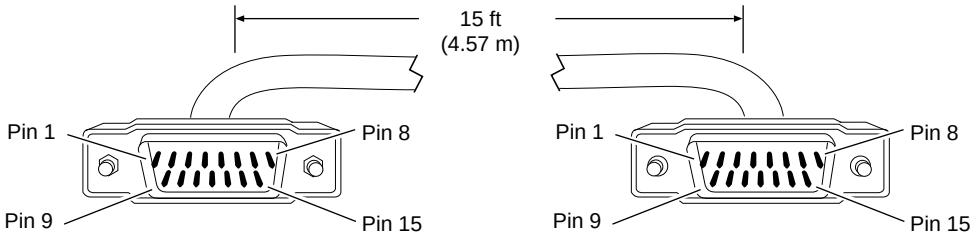
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	F	Data Carrier Detect
Signal Ground	19	B	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

15-Pin D-Sub to X.21 (Order No. 7221)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

15-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

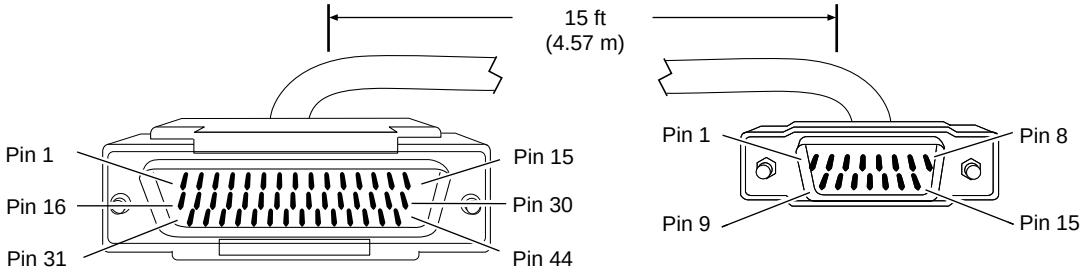
CAB0044A

Industry Interface Type: X.21 (V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Ground	1	1	Ground
Send Data +	2	2	Transmitted Data A
Send Data -	3	9	Transmitted Data B
Request to Send +	6	3	Control A
Request to Send -	15	10	Control B
Receive Data +	14	4	Receive Data A
Receive Data -	13	11	Receive Data B
Data Carrier Detect +	10	5	Indication A
Data Carrier Detect -	9	12	Indication B
Send Timing +	4	6	Timing A
Send Timing -	5	13	Timing B

Note: You must move Jumpers A-E to the X.21 (2-3) position to support this interface.

44-Pin D-Sub to X.21 (Order No. 7224)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

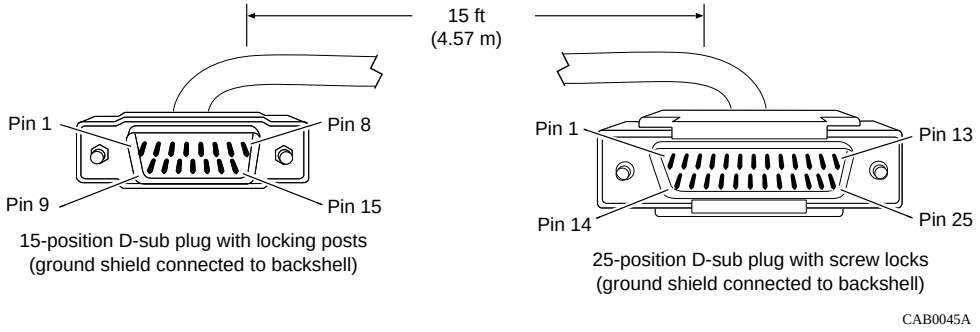
15-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0104A

Industry Interface Type: X.21 (V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Transmitted Data A
Send Data -	16	9	Transmitted Data B
Request to Send +	4	3	Control A
Request to Send -	18	10	Control B
Receive Data +	3	4	Receive Data A
Receive Data -	17	11	Receive Data B
Data Carrier Detect +	9	5	Indication A
Data Carrier Detect -	23	12	Indication B
Send Timing +	10	6	Timing A
Send Timing -	24	13	Timing B
Signal Ground	7	8	Signal Ground
Frame Ground	1	1	Frame Ground
Internal Wire Connections			
Pin 14 > 15			
Pin 28 > 30			
Pin 41 > 43			

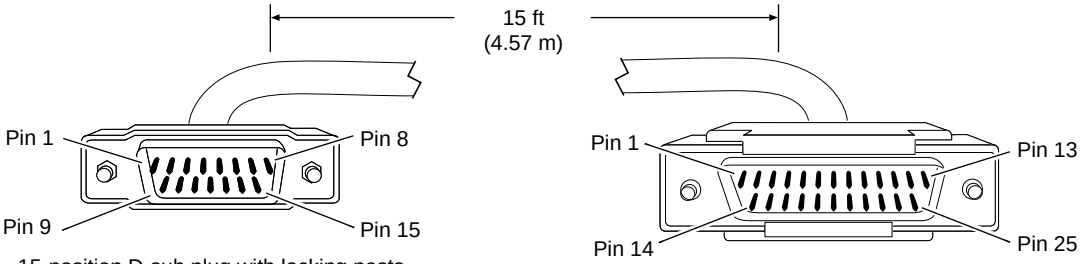
15-Pin D-Sub to RS-232 (Order No. 7255)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7 > 9		Pin 4 > 20	

15-Pin D-Sub to V.28 (Order No. 7256)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

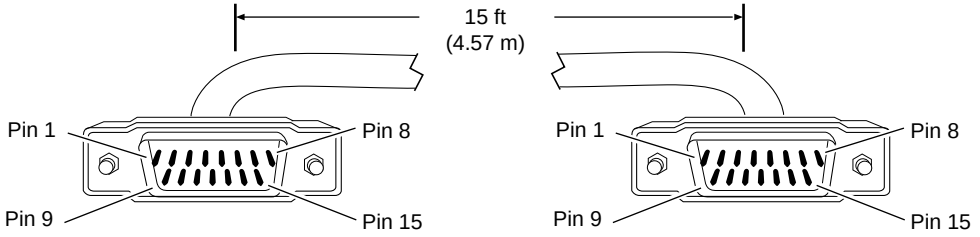
CAB0045B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7 > 9		Pin 4 > 20	

15-Pin Crossover (Order No. 7260)

Note: This crossover cable interconnects two Bay Networks router software platforms.



15-position D-sub plug with locking posts
(ground shield connected to backshell)

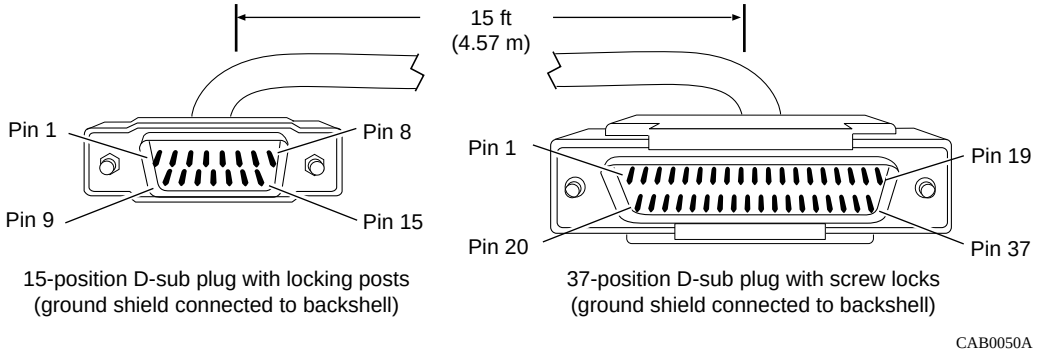
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0049A

Industry Interface Type: V.35

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	15	Return Common
Send Data +	2	14	Receive Data +
Send Data -	3	13	Receive Data -
Serial Clock Transmit +	4	12	Serial Clock Receive +
Serial Clock Transmit -	5	11	Serial Clock Receive -
Request to Send +	6	10	Data Carrier Detect +
Data Carrier Detect +	10	6	Request to Send +
Serial Clock Receive -	11	5	Serial Clock Transmit-
Serial Clock Receive +	12	4	Serial Clock Transmit +
Receive Data -	13	3	Send Data -
Receive Data +	14	2	Send Data +
Return Common	15	1	Signal Ground
Internal Wire Connections			
Pin 6 > 8		Pin 6 > 8	
Pin 7 > 9 > 15		Pin 7 > 9 > 15	

15-Pin D-Sub to RS-422 (Order No. 7315)

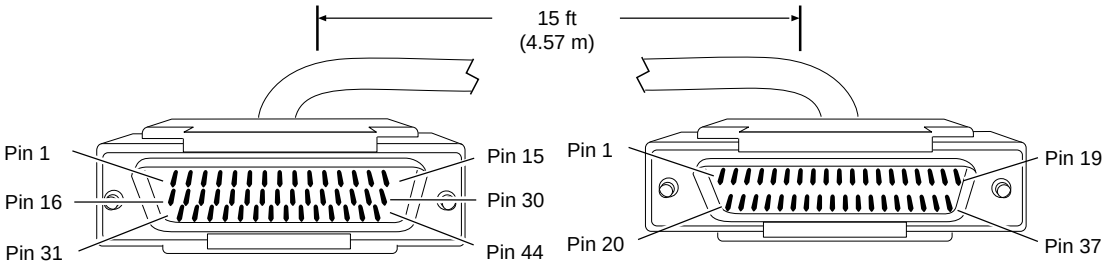


Industry Interface Type: RS-449/RS-422

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	25	Send Common
Send Data +	2	4	Send Data A
Send Data -	3	22	Send Data B
Serial Clock Transmit +	4	5	Send Timing A
Serial Clock Transmit -	5	23	Send Timing B
Request to Send	6	12	Terminal Ready A
Clear to Send -	7	27	Clear to Send B
Clear to Send +	8	9	Clear to Send A
Data Carrier Detect -	9	31	Data Carrier Detect B
Data Carrier Detect +	10	13	Data Carrier Detect A
Serial Clock Receive -	11	26	Receive Timing B
Serial Clock Receive +	12	8	Receive Timing A
Receive Data -	13	24	Receive Data B
Receive Data +	14	6	Receive Data A
Internal Wire Connections			
		Pin 7 > 12	
		Pin 25 > 30 > 37	

Note: You must move Jumpers B and C to the X.21 (2-3) position to support this interface.

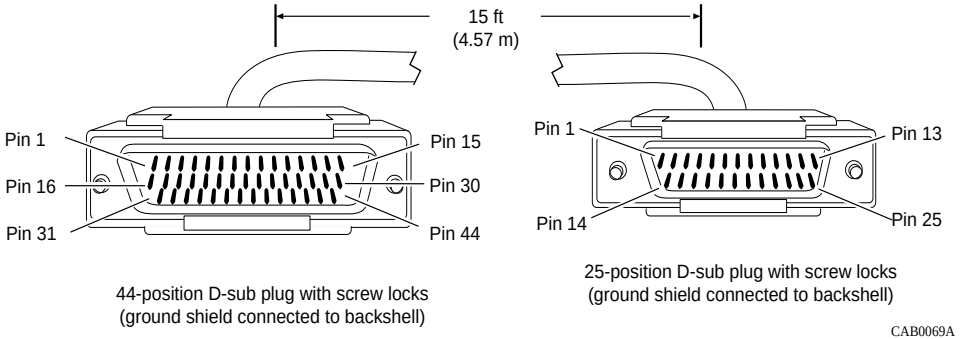
44-Pin D-Sub to RS-422: Leased Line or V.25bis (Order No. 7318)



Industry Interface Type: RS-449/RS-422

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Data Carrier Detect -	23	31	Receiver Ready B
Data Carrier Detect +	9	13	Receiver Ready A
Send Data +	2	4	Send Data A
Send Data -	16	22	Send Data B
Receive Timing +	11	8	Receive Timing A
Receive Timing -	25	26	Receive Timing B
Send Timing +	10	5	Send Timing A
Send Timing -	24	23	Send Timing B
Receive Data +	3	6	Receive Data A
Receive Data -	17	24	Receive Data B
Clear to Send -	19	27	Clear to Send B
Clear to Send +	5	9	Clear to Send A
Request to Send +	4	7	Request to Send A
Request to Send -	18	25	Request to Send B
Data Set Ready +	6	11	DM A
Data Set Ready -	20	29	DM B
Terminal Ready +	8	12	Terminal Ready A
Terminal Ready -	22	30	Terminal Ready B
Terminal Timing +	12	17	Terminal Timing A
Terminal Timing -	26	35	Terminal Timing B
Send Common	44	37	Send Common
Signal Ground	41	19	Signal Ground
Internal Wire Connections			
Pin 41 > 43		Pin 20 > 37	
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

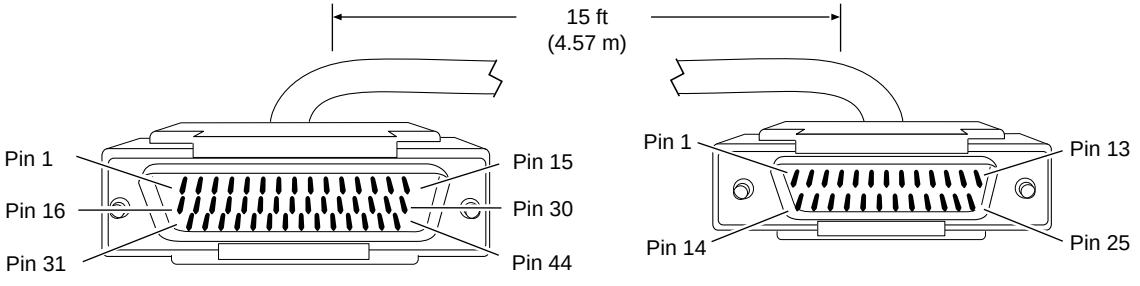
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0069A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send+	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 13 > 28			
Pin 14 > 29			

RS-232 Pass-through: 44-Pin to RS-232 (Order No. 7833)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

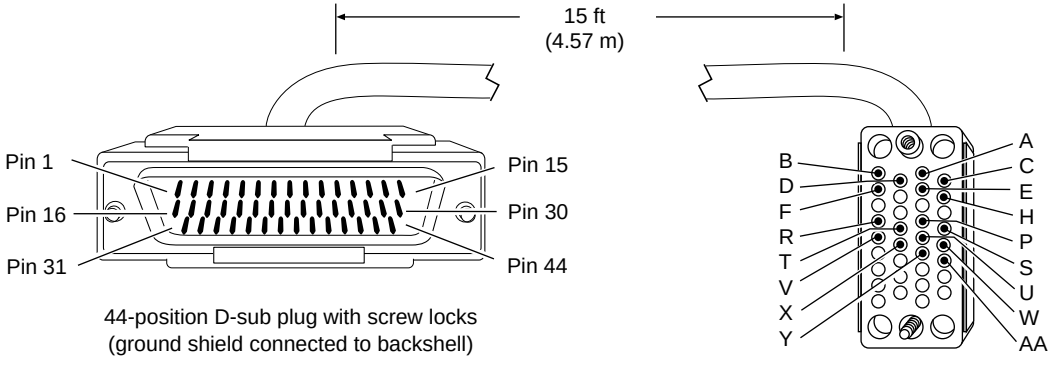
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0065A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**
Signal	**Pin # to Pin #**	**Signal**
Receive Data +	3	2 Send Data
Send Data +	2	3 Receive Data
Data Carrier Detect +	9	5 Clear to Send
RTS +	4	8 Data Carrier Detect
Send Timing +	10	17 Receive Timing
Frame Ground	1	1 Frame Ground
Signal Ground	7	7 Signal Ground
Internal Wire Connections		
Pin 4 > 5		Pin 4 > 5
Pin 10 > 11 > 12		Pin 15 > 17
Pin 7 > 19 > 20 > 23		Pin 6 > 20
Pin 13 > 28		
Pin 14 > 29		

V.35 Pass-through: 44-Pin to V.35 (Order No. 7834)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

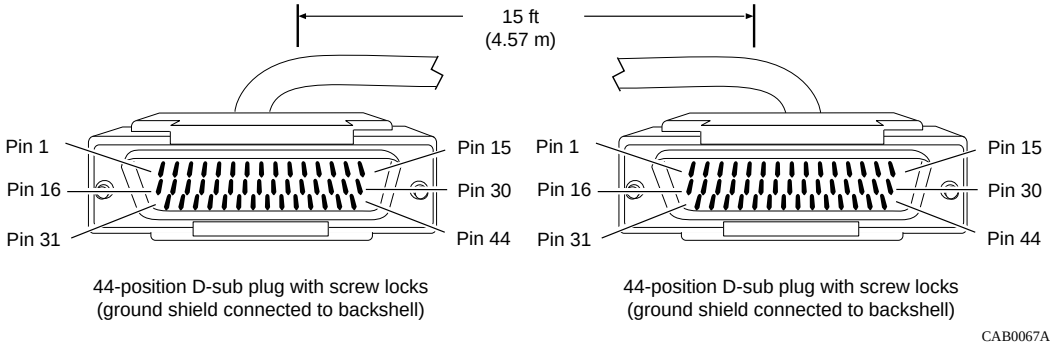
CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	40	V	Receive Timing A
VTT -	39	X	Receive Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 7 > 19 > 20 > 23 > 41 > 42		Pin E > H	
Pin 13 > 28			
Pin 14 > 29			

V.35 Crossover: 44-Pin to 44-Pin (Order No. 7835)

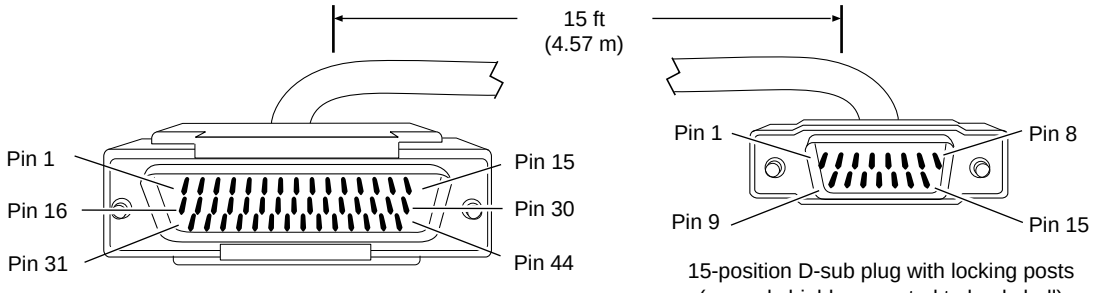
Note: This crossover cable interconnects two Bay Networks router software platforms.



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	37	VRD +
VSD -	36	35	VRD -
VRD +	37	38	VSD +
VRD -	35	36	VSD -
RTS +	4	9	DCD +
DCD +	9	4	RTS +
VRT +	34	40	VTT +
VTT +	40	34	VRT +
VRT -	33	39	VTT -
VTT -	39	33	VRT -
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5 (CTS +)		Pin 4 > 5 (CTS +)	
Pin 32 (VST +) > 40 (VTT +)		Pin 32 (VST +) > 40 (VTT +)	
Pin 31 (VST -) > 39 (VTT -)		Pin 31 (VST -) > 39 (VTT -)	
Pin 7 > 19 > 20 > 23		Pin 7 > 19 > 20 > 23	
Pin 13 > 28		Pin 13 > 28	
Pin 14 > 29		Pin 14 > 29	
Pin 41 > 42 > 43		Pin 41 > 42 > 43	

V.35 Crossover: 44-Pin to 15-Pin (Order No. 7836)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

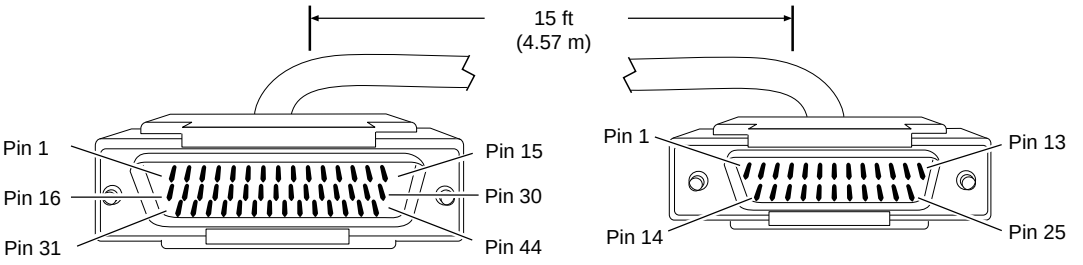
15-position D-sub plug with locking posts
(ground shield connected to backshell)

CAB0068A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	14	Receive Data A
VSD -	36	13	Receive Data B
VRT +	34	4	SCT A
VRT -	33	5	SCT B
VTT +	40	12	SCR A
VTT -	39	11	SCR B
VRD +	37	2	Send Data A
VRD -	35	3	Send Data B
Request to Send +	4	10	Data Carrier Detect A
Data Carrier Detect +	9	8	Clear to Send A
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 32 > 40		Pin 6 > 8	
Pin 31 > 39		Pin 1 > 7 > 9 > 15	
Pin 4 > 5			
Pin 7 > 19 > 20 > 23			
Pin 13 > 28			
Pin 14 > 29			
Pin 41 > 42 > 43			

44-Pin D-Sub to V.28 (Order No. 7837)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

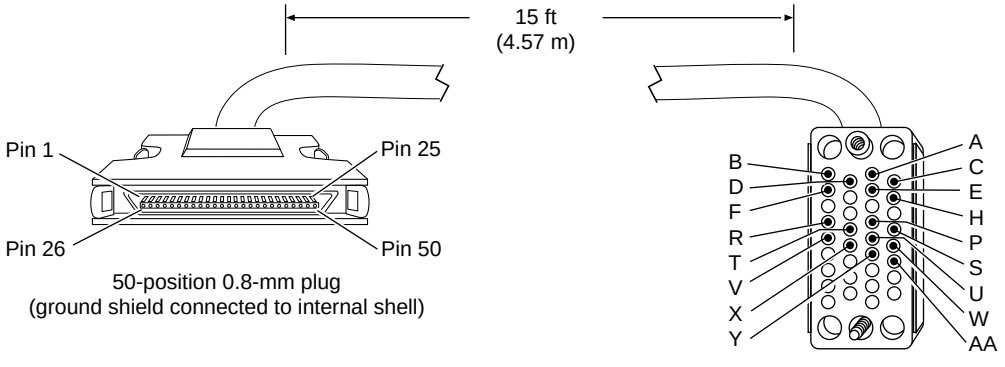
25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0069B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 13 > 28			
Pin 14 > 29			

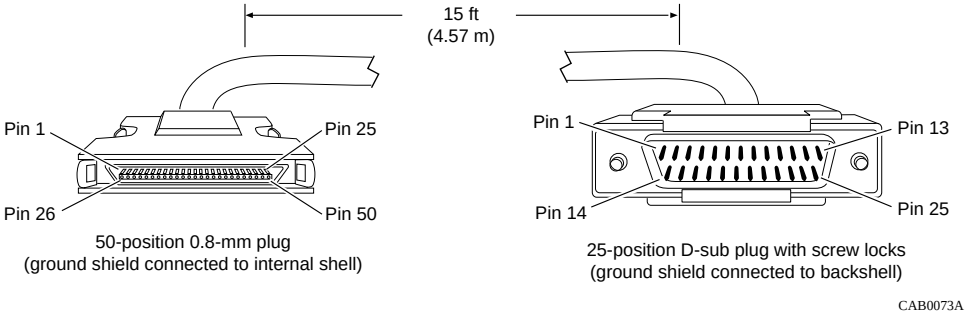
50-Pin to V.35 (Order No. 7932)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect	9	F	Data Carrier Detect
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31 > 34			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

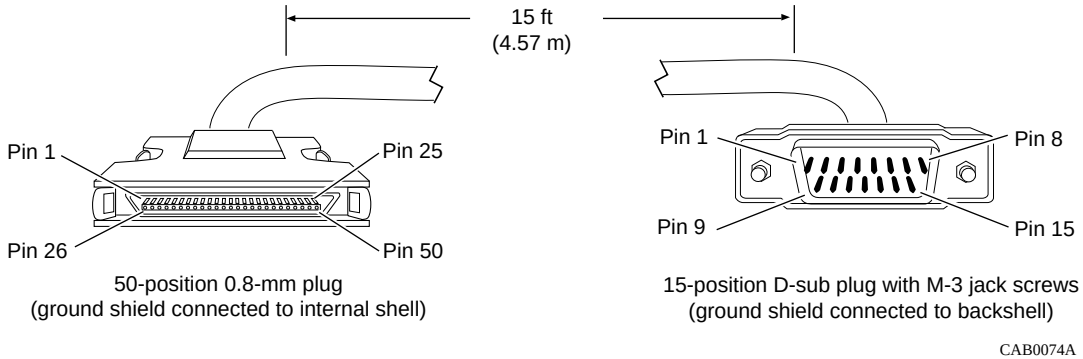
50-Pin to RS-232 (Order No. 7934)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31 > 34			
Pin 13 > 38			
Pin 14 > 39			

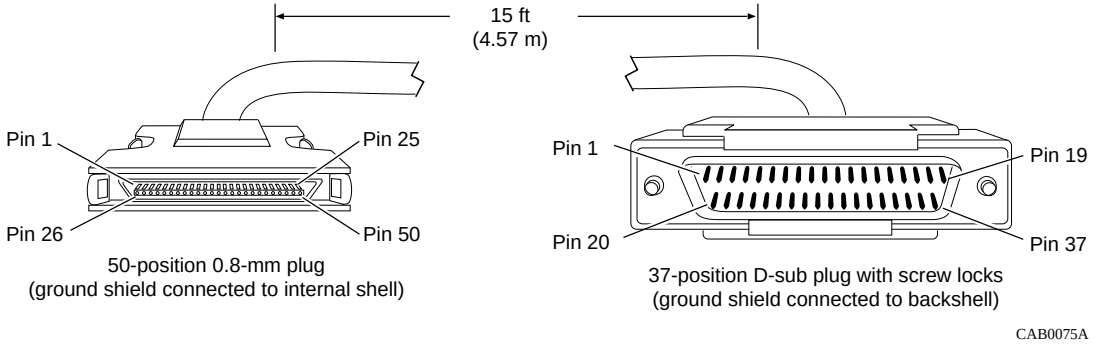
50-Pin to X.21 (Order No. 7936)



Industry Interface Type: X.21 (V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Transmitted Data A
Send Data -	27	9	Transmitted Data B
Request to Send +	4	3	Control A
Request to Send -	29	10	Control B
Receive Data +	3	4	Receive Data A
Receive Data -	28	11	Receive Data B
Data Carrier Detect +	9	5	Indication A
Data Carrier Detect -	34	12	Indication B
Timing +	10	6	Timing A
Timing -	35	13	Timing B
Frame Ground	1	1	Frame Ground
Signal Ground	7	8	Signal Ground
Internal Wire Connections			
Pin 46 > 48 (GRD)			
Pin 38 > 40			
Pin 14 > 15			

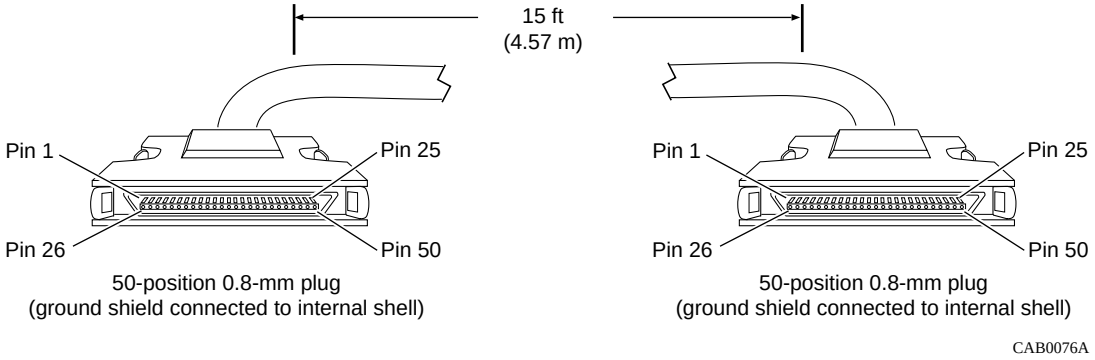
50-Pin to RS-422 (Order No. 7937)



Industry Interface Type: RS-449/RS-422

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Data Carrier Detect -	34	31	Receiver Ready B
Data Carrier Detect +	9	13	Receiver Ready A
Send Data +	2	4	Send Data A
Send Data -	27	22	Send Data B
Receive Timing +	11	8	Receive Timing A
Receive Timing -	36	26	Receive Timing B
Send Timing +	10	5	Send Timing A
Send Timing -	35	23	Send Timing B
Receive Data +	3	6	Receive Data A
Receive Data -	28	24	Receive Data B
Clear to Send -	30	27	Clear to Send B
Clear to Send +	5	9	Clear to Send A
Request to Send +	4	7	Request to Send A
Request to Send -	29	25	Request to Send B
Data Set Ready +	6	11	Data Mode A
Data Set Ready -	31	29	Data Mode B
Terminal Ready +	8	12	Terminal Ready A
Terminal Ready -	33	30	Terminal Ready B
Terminal Timing +	12	17	Terminal Timing A
Terminal Timing -	37	35	Terminal Timing B
Send Common	49	37	Send Common
Signal Ground	48	19	Signal Ground
Internal Wire Connections			
Pin 46 (UNBE) > 48 (SGRD)		Pin 20 > 37	
Pin 13 > 38			
Pin 14 > 39			

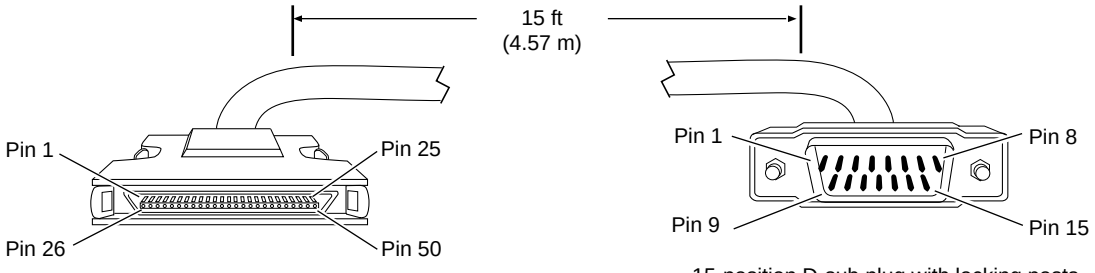
50-Pin to 50-Pin Crossover (Order No. 7938)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination A		Bay Networks Termination B	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	43	VRD +
VSD -	19	18	VRD -
VRD +	43	44	VSD +
VRD -	18	19	VSD -
Request to Send +	4	9	Data Carrier Detect +
Data Carrier Detect +	9	4	Request to Send +
VRT +	42	45	VTT +
VTT +	45	42	VRT +
VRT -	17	20	VTT -
VTT -	20	17	VRT -
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5 (CTS +)		Pin 4 > 5 (CTS +)	
Pin 41 (VST +) > 45 (VTT +)		Pin 41 (VST +) > 45 (VTT +)	
Pin 16 (VST -) > 20 (VTT -)		Pin 16 (VST -) > 20 (VTT -)	
Pin 7 > 30 > 31 > 34		Pin 7 > 30 > 31 > 34	
Pin 13 > 38		Pin 13 > 38	
Pin 14 > 39		Pin 14 > 39	
Pin 46 > 47 > 48		Pin 46 > 47 > 48	

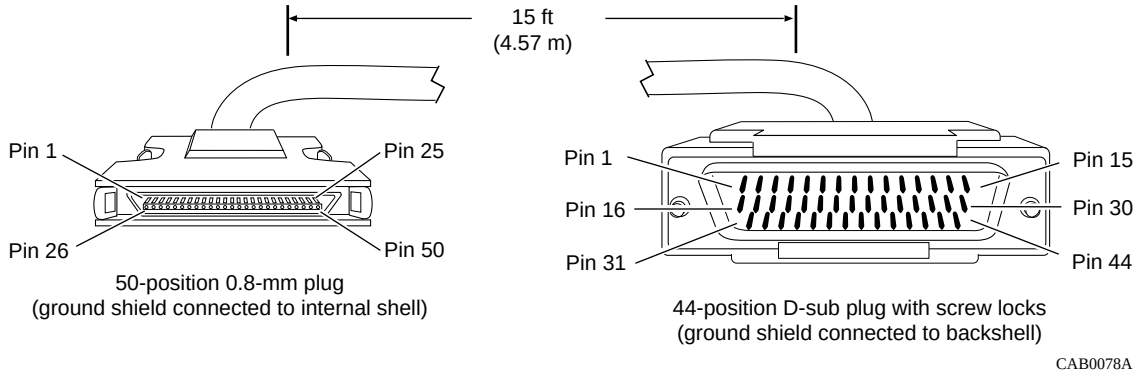
50-Pin to 15-Pin Crossover (Order No. 7939)



Industry Interface Type: V.35 (V10 and V.11)

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	14	Receive Data +
VSD -	19	13	Receive Data -
VRD +	43	2	Send Data +
VRD -	18	3	Send Data -
Request to Send +	4	10	Data Carrier Detect +
Data Carrier Detect +	9	6	Request to Send +
VRT +	42	4	SCT +
VTT +	45	12	SCR +
VRT -	17	5	SCT -
VTT -	20	11	SCR -
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 4 > 5 (CTS +)		Pin 6 > 8 (CTS +)	
Pin 41 (VST +) > 45 (VTT +)		Pin 1 > 7 > 9 >15	
Pin 16 (VST -) > 20 (VTT -)			
Pin 7 > 30 > 31 > 34			
Pin 13 > 38			
Pin 14 > 39			
Pin 46 > 47 > 48			

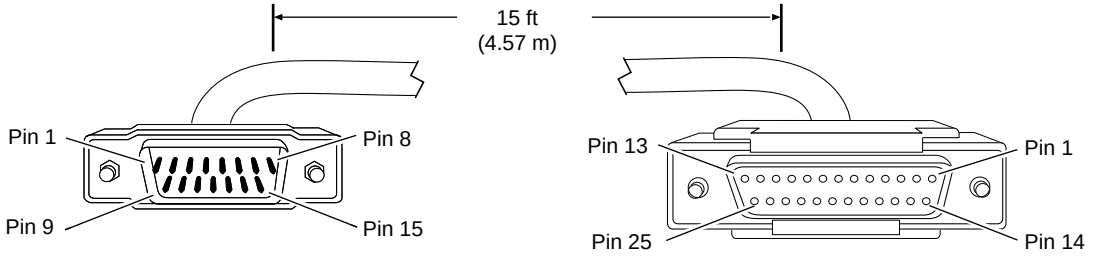
50-Pin to 44-Pin Crossover (Order No. 7940)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination A		**Bay Networks Termination B**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	37	VRD +
VSD -	19	35	VRD -
VRD +	43	38	VSD +
VRD -	18	36	VSD -
Request to Send +	4	9	Data Carrier Detect +
Data Carrier Detect +	9	4	Request to Send +
VRT +	42	40	VTT +
VTT +	45	34	VRT +
VRT -	17	39	VTT -
VTT -	20	33	VRT -
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5 (CTS +)		Pin 4 > 5 (CTS +)	
Pin 41 (VST +) > 45 (VTT +)		Pin 32 (VST +) > 40 (VTT +)	
Pin 16 (VST -) > 20 (VTT -)		Pin 31 (VST -) > 39 (VTT -)	
Pin 7 > 30 > 31 > 34		Pin 7 > 19 > 20 > 23	
Pin 13 > 38		Pin 13 > 28	
Pin 14 > 39		Pin 14 > 29	
Pin 46 > 47 > 48		Pin 41 > 42 > 43	

15-Pin to F RS-232 Synchronous Pass-through (Order No. 7941)



15-position D-sub plug with locking posts (ground shield connected to backshell)

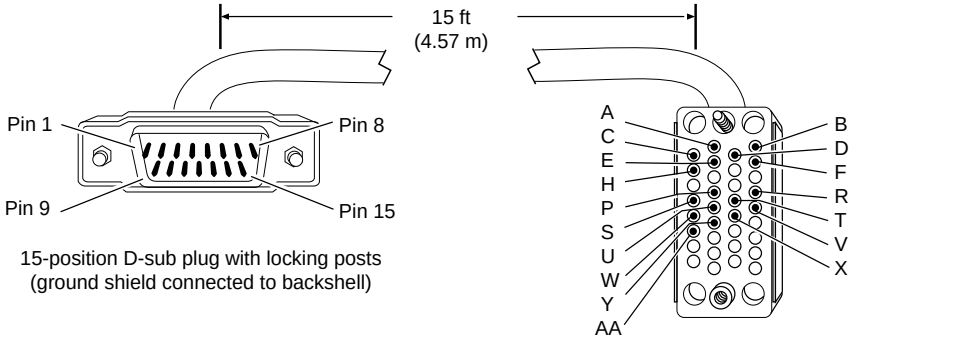
25-position D-sub receptacle with screw locks (ground shield connected to backshell)

CAB0079A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	3	Receive Data
Receive Data	14	2	Transmit Data
Request to Send	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Request to Send
Transmit Clock	4	15	Transmit Clock
Signal Ground	1	7	Signal Ground
Internal Wire Connections			
Pin 6 > 8		Pin 4 > 5	
Pin 3 > 4 > 12		Pin 15 > 17	
Pin 1 > 7 > 9		Pin 6 > 20	

15-Pin to F V.35 Synchronous Pass-through (Order No. 7942)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

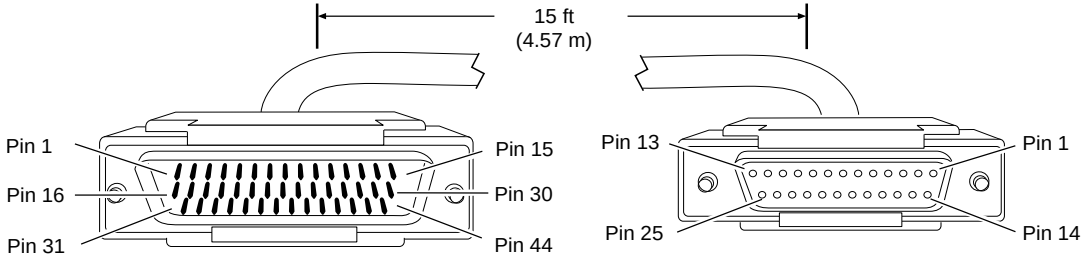
34-position V.35 receptacle with screw jack retainers
(ground shield connected to backshell)

CAB0080A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data +	2	R	Receive Data A
Transmit Data -	3	T	Receive Data B
Receive Data +	14	P	Transmit Data A
Receive Data -	13	S	Transmit Data B
Request to Send+	6	F	Data Carrier Detect
Data Carrier Detect +	10	D	Clear to Send
SCT +	4	Y	SCT A
SCT -	5	AA	SCT B
Signal Ground	1	B	Signal Ground
Internal Wire Connections			
Pin 1 > 7		Pin C > D	
Pin 6 > 8		Pin Y > V	
Pin 4 > 12		Pin AA > X	
Pin 5 > 11		Pin E > H	

44-Pin to F RS-232 Synchronous Pass-through (Order No. 7943)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

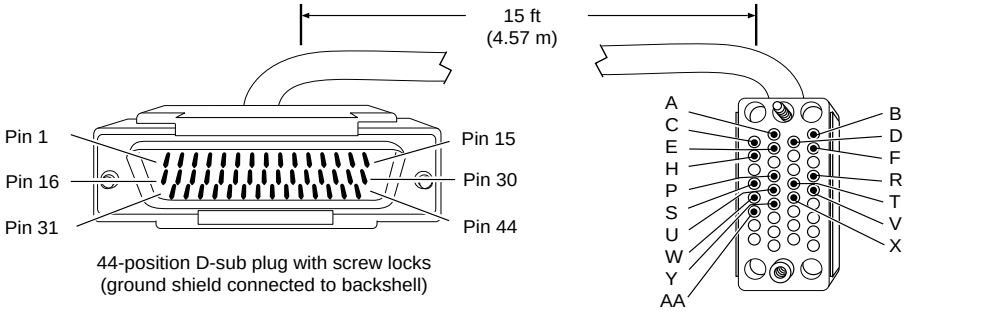
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0081A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 28		Pin 6 > 20	
Pin 14 > 29			
Pin 7 > 19 > 20 > 23			

44-Pin to F V.35 Synchronous Pass-through (Order No. 7944)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

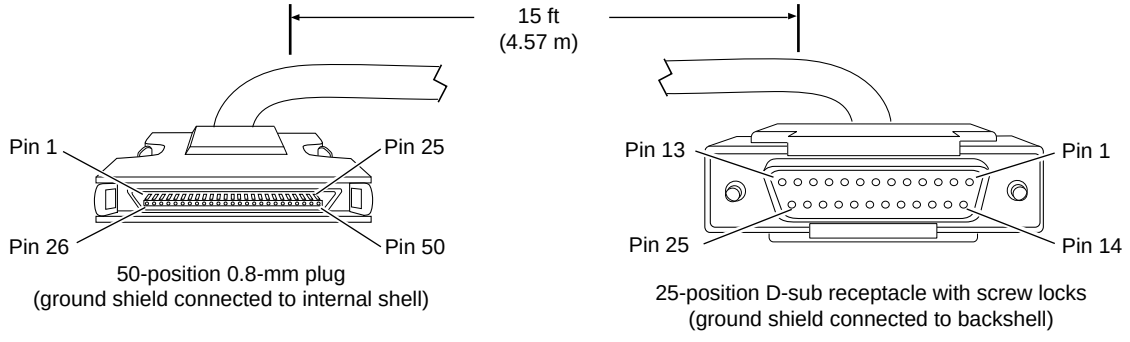
34-position V.35 receptacle with screw jack retainers
(ground shield connected to backshell)

CAB0082A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	C	Request to Send
VTT +	40	Y	Send Timing A
VTT -	39	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 13 > 28		Pin E > F	
Pin 14 > 29			
Pin 7 > 19 > 20 > 23 > 41 > 42			

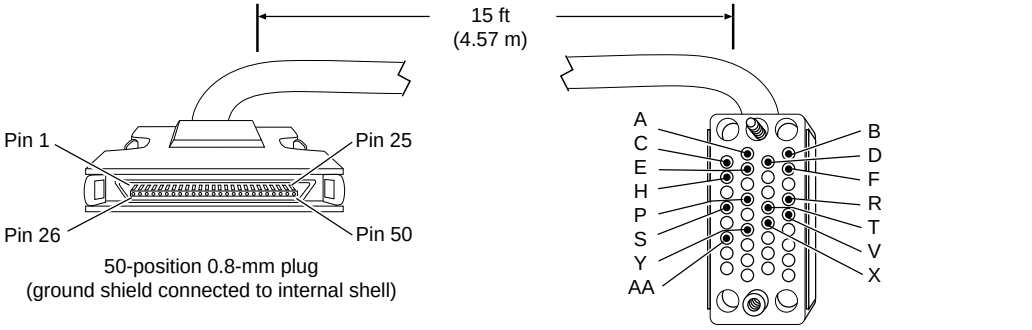
50-Pin to F RS-232 Synchronous Pass-through (Order No. 7945)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 38		Pin 6 > 20	
Pin 14 > 39			
Pin 7 > 30 > 31 > 34			

50-Pin to F V.35 Synchronous Pass-through (Order No. 7946)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	R	Receive Data A
VSD -	19	T	Receive Data B
VRD +	43	P	Send Data A
VRD -	18	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	45	Y	Send Timing A
VTT -	20	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 41 > 42 > 45		Pin V > Y	
Pin 16 > 17 > 20		Pin X > AA	
Pin 13 > 38		Pin E > F	
Pin 14 > 39			
Pin 7 > 30 > 31 > 34 > 46 > 47			

Chapter 7
Dialup Services Cables

This chapter identifies dialup services cables necessary for linking Bay Networks router hardware platforms to WAN dial-on-demand and dial backup devices.

Note: Order Nos. 7220, 7318, 7826, 7932, 7943, and 7937 support V.25 bis.

Table 7-1 summarizes the cables. Detailed cable illustrations and pinout specifications follow.

Table 7-1. Dialup Services Cables

Order No.	Length	Physical Cable Description	Raise DTR	V.25bis	Page
7116	15 ft (4.57 m)	15-pin D-sub plug to RS-422 plug		√	7-3
7117	15 ft (4.57 m)	15-pin D-sub plug to RS-422 plug	√		7-5
7118	15 ft (4.57 m)	15-pin D-sub plug to RS-232 plug	√		7-7
7119	15 ft (4.57 m)	15-pin D-sub plug to RS-232 plug		√	7-8
7120	15 ft (4.57 m)	15-pin D-sub plug to V.35 plug		√	7-9
7121	15 ft (4.57 m)	15-pin D-sub plug to V.35 plug	√		7-10
7137	15 ft (4.57 m)	44-pin D-sub plug to V.35 plug	√		7-11
7138	15 ft (4.57 m)	44-pin D-sub plug to RS-232 plug	√		7-13
7139	15 ft (4.57 m)	44-pin D-sub plug to RS-422 plug	√		7-15
7933	15 ft (4.57 m)	50-pin to V.35 with raise DTR	√		7-17
7935	15 ft (4.57 m)	50-pin to RS-232 with raise DTR	√		7-19

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

- Illustrations for each cable with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

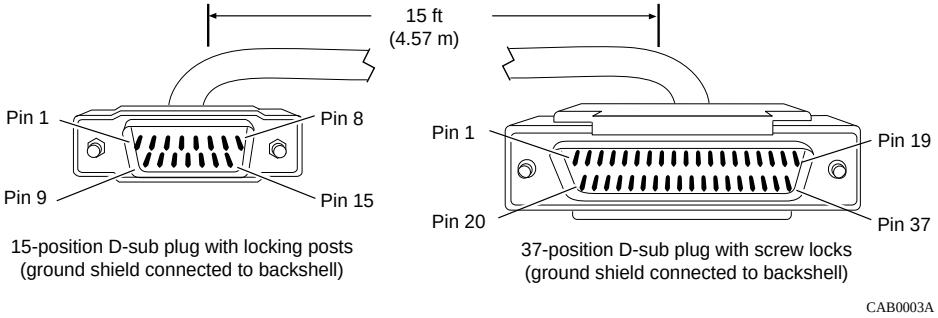
  If you want to build a cable, and you want to determine the maximum cable length appropriate for each of your interconnection requirements, you should

  -- Identify in this chapter a cable that satisfies your wiring requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)
- Pinouts for each connector and all associated signals
- Wire jumper identification for either connector (when applicable)

  For example, the 15-pin D-sub to RS-422 cable (Order No. 7116) lists internal wire connections (Pin 7 > 12; Pin 25 > 30) in the Remote Termination column. This indicates that you must connect pin 7 to pin 12 and pin 25 to pin 30 inside the remote connector.
- Grounding arrangements that isolate the chassis from the DC ground within the cable

15-Pin D-Sub to RS-422: V.25bis (Order No. 7116)

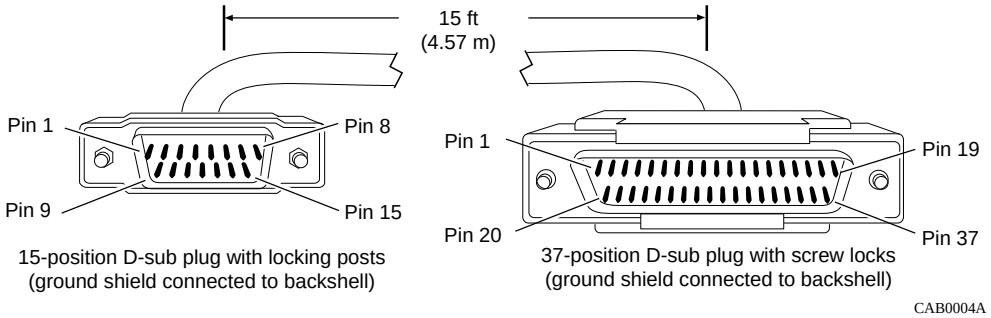


Industry Interface Type: RS-449/RS-422

Bay Networks Termination		Remote Termination	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	37	Send Ground
Send Data +	2	4	Send Data A
Send Data -	3	22	Send Data B
Serial Clock Transmit +	4	5	Send Timing A
Serial Clock Transmit -	5	23	Send Timing B
Request to Send +	6	7	Request to Send A
Clear to Send -	7	27	Clear to Send B
Clear to Send +	8	9	Clear to Send A
Data Carrier Detect -	9	29	Data Mode B
Data Carrier Detect +	10	11	Data Mode A
Serial Clock Receive -	11	26	Receive Timing B
Serial Clock Receive +	12	8	Receive Timing A
Receive Data -	13	24	Receive Data B
Receive Data +	14	6	Receive Data A
Request to Send -	15	25	Request to Send B
Internal Wire Connections			
		Pin 7 > 12 (Terminal Ready A)	
		Pin 25 > 30 (Terminal Ready B)	

Note: You must move Jumpers B and C to the X.21 (2-3) position to support this interface.

15-Pin D-Sub to RS-422: Raise DTR (Order No. 7117)

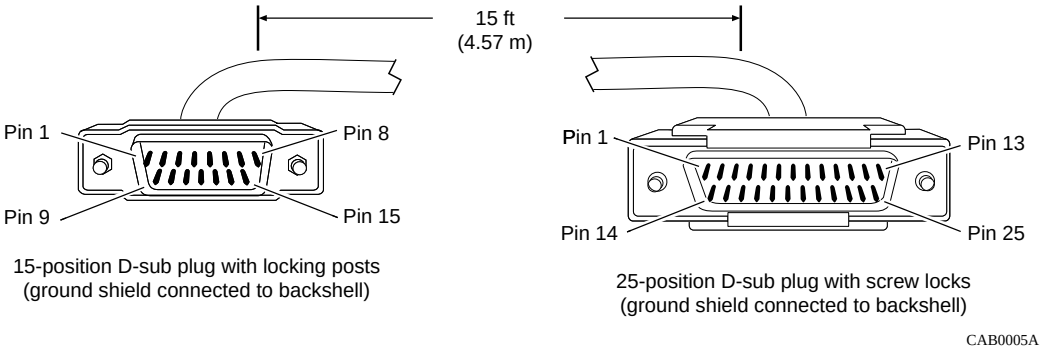


Industry Interface Type: RS-449/RS-422

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	37	Send Ground
Send Data +	2	4	Send Data A
Send Data -	3	22	Send Data B
Serial Clock Transmit +	4	5	Send Timing A
Serial Clock Transmit -	5	23	Send Timing B
Request to Send +	6	7	Request to Send A
Clear to Send -	7	29	Data Mode B
Clear to Send +	8	11	Data Mode A
Data Carrier Detect +	10	15	Incoming Call
Serial Clock Receive -	11	26	Receive Timing B
Serial Clock Receive +	12	8	Receive Timing A
Receive Data -	13	24	Receive Data B
Receive Data +	14	6	Receive Data A
Request to Send -	15	25	Request to Send B
Internal Wire Connections			
Pin 1 > 9		Pin 7 > 12 (Terminal Ready A)	
		Pin 25 > 30 > 37	

Note: You must move Jumpers B and C to the X.21 (2-3) position to support this interface.

15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

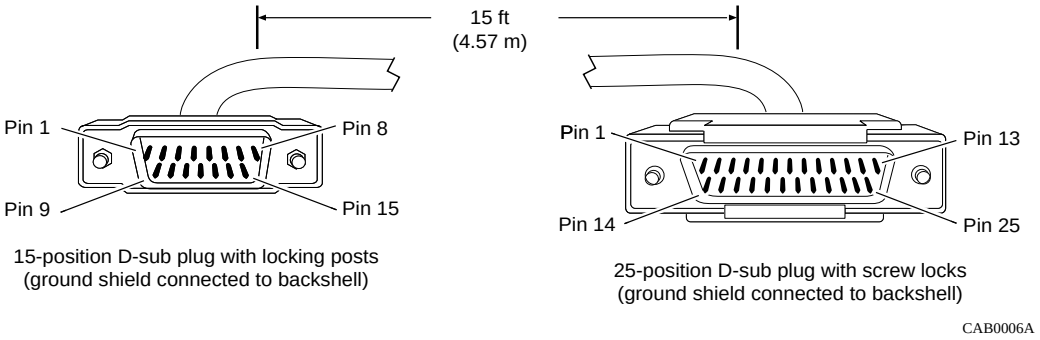
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0005A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	6	Data Set Ready
Data Carrier Detect	10	22	Ring Indicator
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7 > 9		Pin 4 > 20 (Data Terminal Ready)	

15-Pin D-Sub to RS-232: V.25bis (Order No. 7119)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

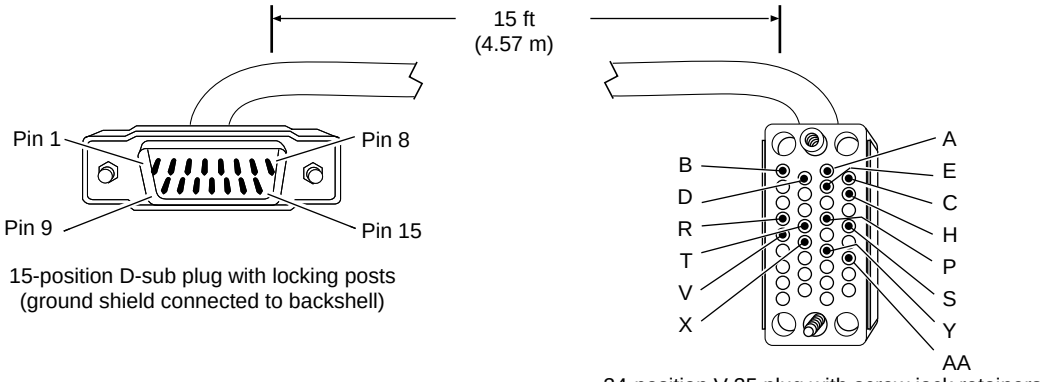
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0006A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Data Carrier Detect	10	6	Data Set Ready
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7 > 9		Pin 4 > 20 (Data Terminal Ready)	

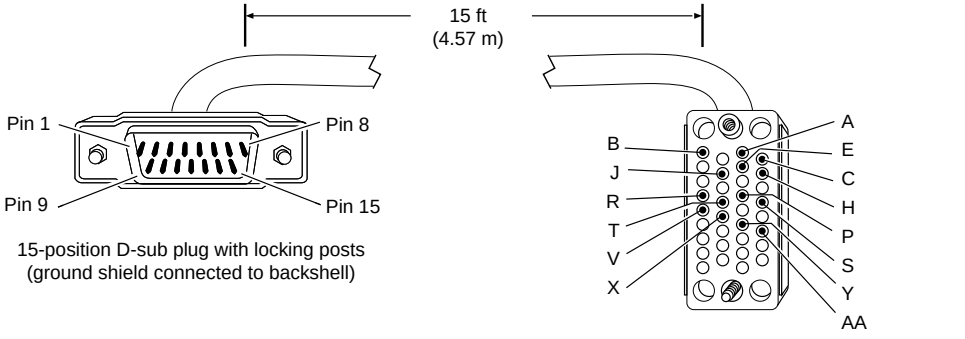
15-Pin D-Sub to V.35: V.25bis (Order No. 7120)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	D	Clear to Send
Data Carrier Detect +	10	E	Data Set Ready
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7 > 9		Pin C > H (Data Terminal Ready)	

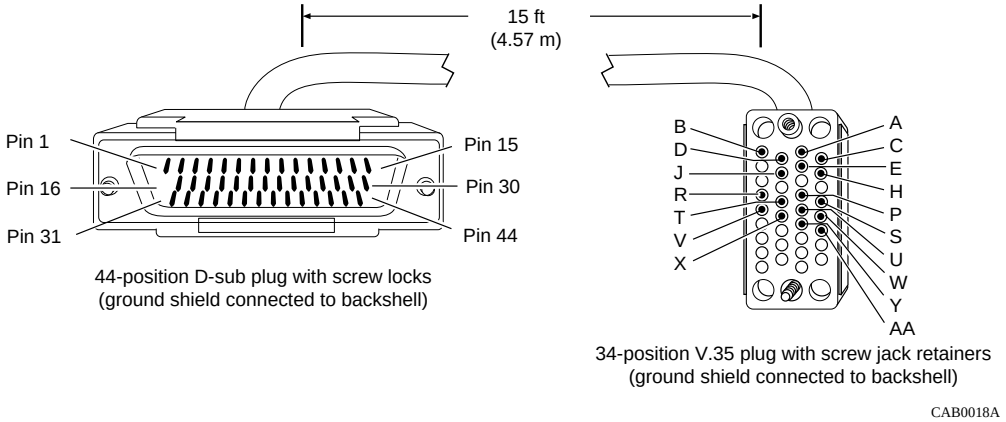
15-Pin D-Sub to V.35: Raise DTR (Order No. 7121)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	E	Data Set Ready
Data Carrier Detect +	10	J	Ring Indicator
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7 > 9		Pin C > H (Data Terminal Ready)	

44-Pin D-Sub to V.35: Raise DTR (Order No. 7137)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

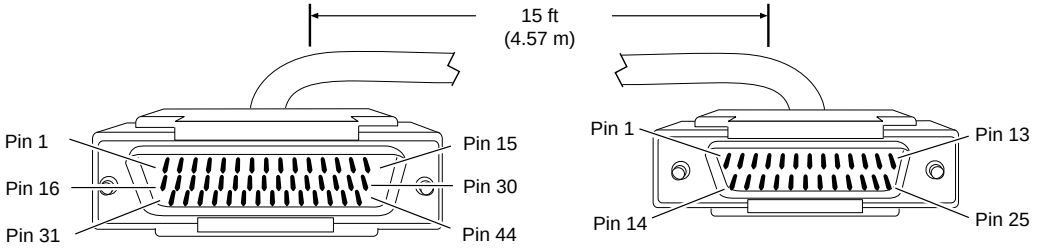
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0018A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	J	Ring Indicator
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

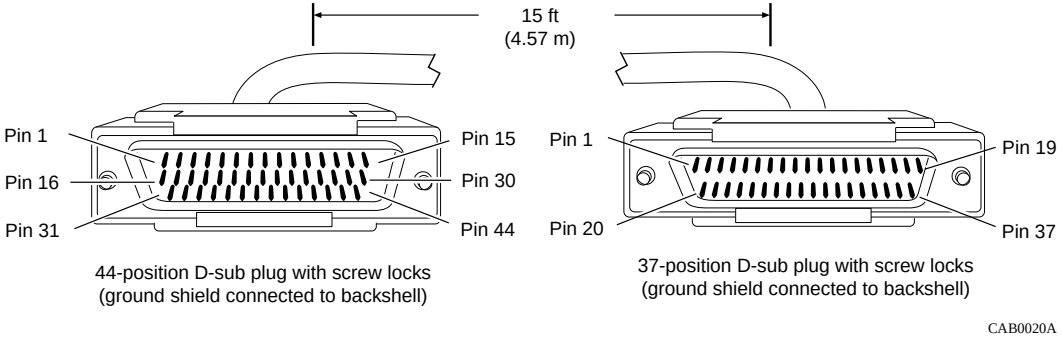
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0019A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Internal Wire Connections			
Pin 7 > 19 > 20 > 23			
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to RS-422: Raise DTR (Order No. 7139)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

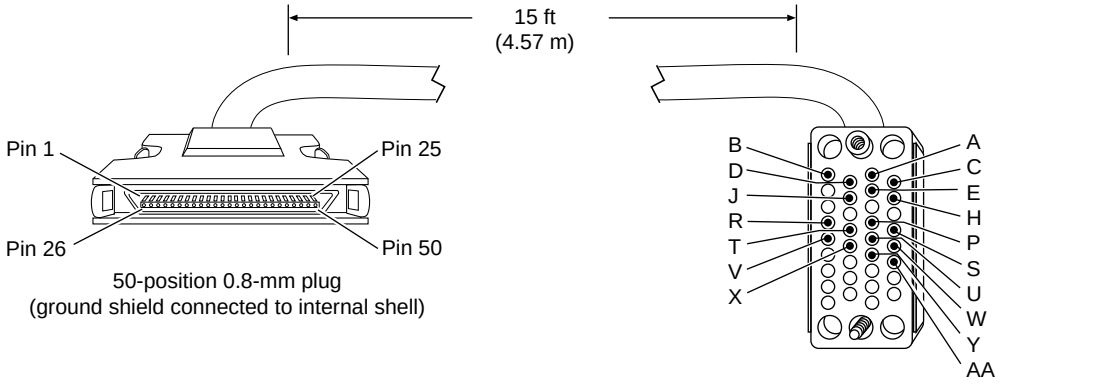
37-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0020A

Industry Interface Type: RS-449/RS-422

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	4	Send Data A
Send Data -	16	22	Send Data B
Receive Data +	3	6	Receive Data A
Receive Data -	17	24	Receive Data B
Request to Send +	4	7	Request to Send A
Request to Send -	18	25	Request to Send B
Clear to Send +	5	9	Clear to Send A
Clear to Send -	19	27	Clear to Send B
Data Set Ready +	6	11	Data Mode A
Data Set Ready -	20	29	Data Mode B
Terminal Ready +	8	12	Data Terminal Ready A
Terminal Ready -	22	30	Data Terminal Ready B
Data Carrier Detect +	9	15	Ring Indicator
Send Timing +	10	5	Send Timing A
Send Timing -	24	23	Send Timing B
Receive Timing +	11	8	Receive Timing A
Receive Timing -	25	26	Receive Timing B
Terminal Timing +	12	17	Terminal Timing A
Terminal Timing -	26	35	Terminal Timing B
Send Common	44	37	Send Common
Signal Ground	41	19	Signal Ground
Internal Wire Connections			
Pin 13 > 28			
Pin 14 > 29			
Pin 23 > 41 > 43			

50-Pin to V.35 with Raise DTR (Order No. 7933)



50-position 0.8-mm plug
(ground shield connected to internal shell)

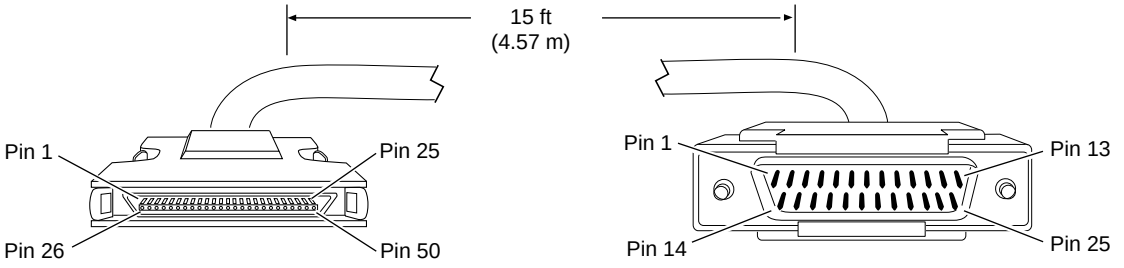
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0071A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	J	Ring Indicator
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31 > 34			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

50-Pin to RS-232 with Raise DTR (Order No. 7935)



50-position 0.8-mm plug
(ground shield connected to internal shell)

25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0072A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31 > 34			
Pin 13 > 38			
Pin 14 > 39			

Chapter 8
Cable Adapters

This chapter identifies the cable adapters that enable existing cables to connect to different ports. These cable assemblies automatically select the appropriate interface type.

Table 8-1 summarizes the cable adapters. Detailed cable illustrations and pinouts follow.

Table 8-1. Console/Modem Cables

Order No.	Length	Physical Cable Description	Page
7122	12 in. (0.3 m)	44-pin to 15-pin RS-232 cable adapter	8-3
7123	12 in. (0.3 m)	44-pin to 15-pin X.21 cable adapter	8-5
7124	12 in. (0.3 m)	44-pin to 15-pin V.35 cable adapter	8-7
7131	12 in. (0.3 m)	44-pin to 15-pin RS-422 cable adapter	8-9
7947	12 in. (0.3 m)	50-pin to 44-pin cable adapter	8-11
7948	12 in. (0.3 m)	50-pin to 15-pin V.35 cable adapter	8-14
AA0018024	12 in. (0.3 m)	50-pin to 15-pin RS-422 cable adapter	8-16

If you need to order additional cables, contact the Bay Networks Technical Solutions Center in your area. (See “How to Get Help” in the front matter.)

The following sections include

- Cable illustrations with the Bay Networks connector on the left and the remote connector on the right
- Cable length information

  If you want to build a cable, and you want to determine the maximum cable length appropriate for that interconnection requirement, you should

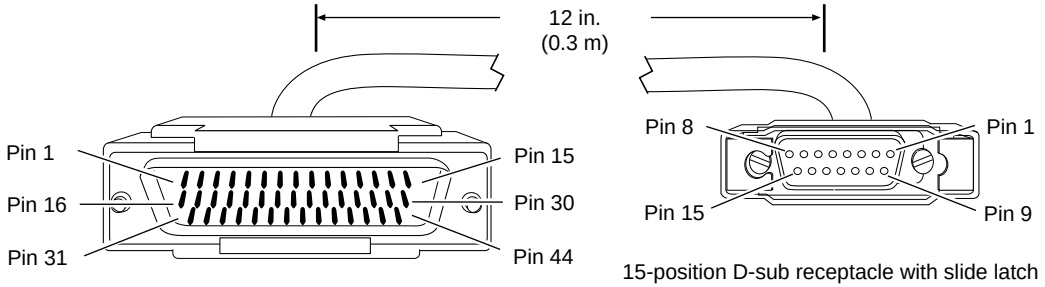
  -- Identify in this chapter a cable that satisfies your interconnection requirement (with the exception of total cable length)

  -- Consult the networking industry specification, standard, or recommendation designated in the “Industry Interface Type” entry for that cable (located immediately following the cable pinout diagram)
- Pinouts for each connector and all associated signals
- Internal wire connections for each termination (when applicable)

  For example, the 44-pin to 15-pin RS-232 cable adapter (Order No. 7122) lists internal wire connections such as “Pin 13 > 28” in the Bay Networks Termination column. This indicates that you must connect pin 13 to pin 28 inside the Bay Networks termination.
- Grounding arrangements that isolate the chassis from the DC ground within the cable (when applicable)

44-Pin to 15-Pin RS-232 Cable Adapter (Order No. 7122)

Note: This adapter enables you to connect an existing 15-pin RS-232 cable (Order No. 7255 or 7256) to a 44-pin port. This cable assembly automatically selects the RS-232 interface.



44-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub receptacle with slide latch
connected to backshell

CAB0010A

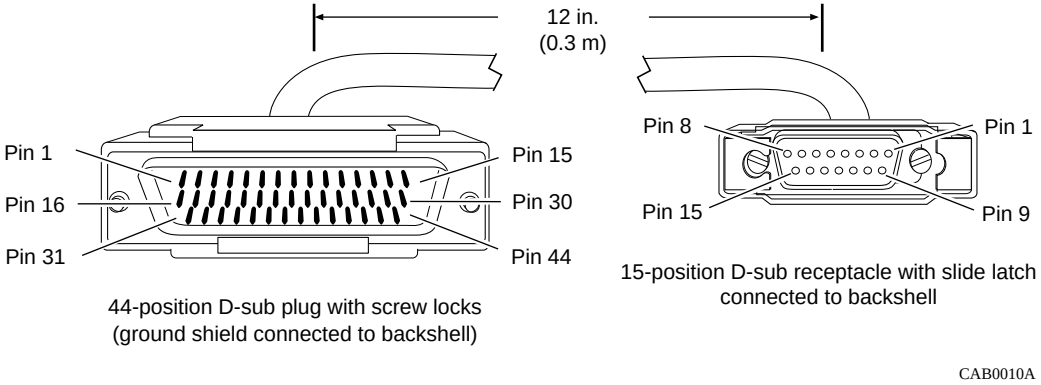
Industry Interface Type: RS-232-C

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		**Termination to Existing Cable**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Send Data
Receive Data +	3	14	Receive Data
Request to Send +	4	6	Request to Send
Clear to Send +	5	8	Clear to Send
Data Set Ready +	6	15	Data Set Ready
Data Carrier Detect +	9	10	Data Carrier Detect
Send Timing +	10	4	Send Timing
Receive Timing +	11	12	Receive Timing
Transmitter Timing +	12	3	Transmitter Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23		Pin 1 > 7 > 9	
Pin 13 > 28			
Pin 14 > 29			

44-Pin to 15-Pin X.21 Cable Adapter (Order No. 7123)

Note: This adapter enables you to connect an existing 15-pin X.21 cable (Order No. 7221) to a 44-pin port. This cable assembly automatically selects the X.21 interface.



44-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub receptacle with slide latch
connected to backshell

CAB0010A

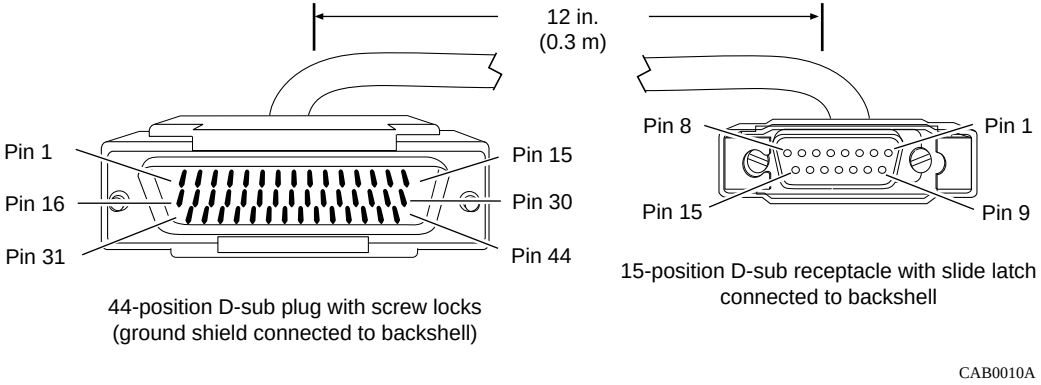
Industry Interface Type: X.21

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		**Termination to Existing Cable**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Send Data +
Send Data -	16	3	Send Data -
Receive Data +	3	14	Receive Data +
Receive Data -	17	13	Receive Data -
Data Carrier Detect +	9	10	Data Carrier Detect +
Data Carrier Detect -	23	9	Data Carrier Detect -
Request to Send +	4	6	Request to Send +
Request to Send -	18	15	Request to Send -
Send Timing +	10	4	Timing +
Send Timing -	24	5	Timing -
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23		Pin 1 > 7 > 9	
Pin 28 > 30		Pin 4 > 12	
Pin 14 > 15		Pin 5 > 11	
Pin 41 > 43			

44-Pin to 15-Pin V.35 Cable Adapter (Order No. 7124)

Note: This adapter enables you to connect an existing 15-pin V.35 cable (Order No. 7215 or 7216) to a 44-pin port. This cable assembly automatically selects the V.35 interface.



44-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub receptacle with slide latch
connected to backshell

CAB0010A

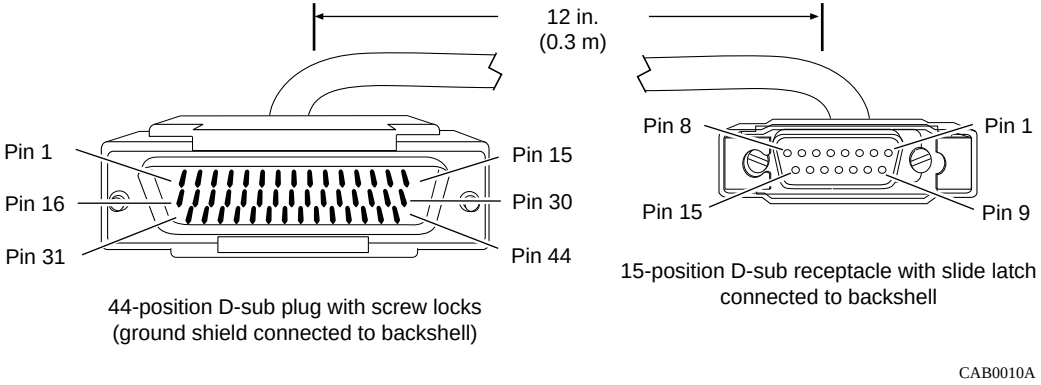
Industry Interface Type: V.35

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		**Termination to Existing Cable**	
Signal	**Pin # to Pin #**		**Signal**
VRD +	37	14	Receive Data +
VRD -	35	13	Receive Data -
VSD +	38	2	Send Data +
VSD -	36	3	Send Data -
Data Carrier Detect +	9	10	Data Carrier Detect +
Request to Send +	4	6	Request to Send +
Clear to Send +	5	8	Clear to Send +
Data Set Ready +	6	15	Data Set Ready +
VRT +	34	12	Receive Timing +
VRT -	33	11	Receive Timing -
VST +	32	4	Send Timing +
VST -	31	5	Send Timing -
Signal Ground	19	1	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20 > 23		Pin 1 > 7 > 9	
Pin 13 > 28			
Pin 14 > 29			
Pin 41 > 42 > 43			

44-Pin to 15-Pin RS-422 Cable Adapter (Order No. 7131)

Note: This adapter enables you to connect an existing 15-pin RS-422 cable (Order No. 7315 or AA0018011) to a 44-pin port. This cable assembly automatically selects the RS-422 interface.



44-position D-sub plug with screw locks
(ground shield connected to backshell)

15-position D-sub receptacle with slide latch
connected to backshell

CAB0010A

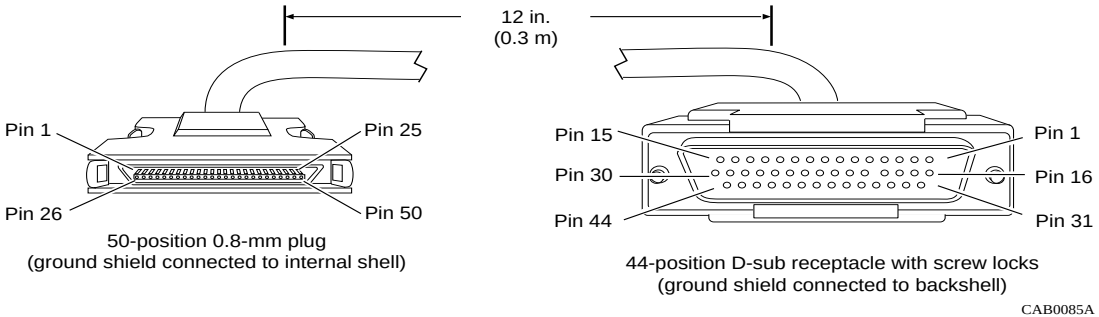
Industry Interface Type: RS-422

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		**Termination to Existing Cable**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Send Data +
Send Data -	16	3	Send Data -
Receive Data +	3	14	Receive Data +
Receive Data -	17	13	Receive Data -
Data Carrier Detect +	9	10	Data Carrier Detect +
Data Carrier Detect -	23	9	Data Carrier Detect -
Request to Send +	4	6	Request to Send +
Request to Send -	18	15	Request to Send -
Clear to Send +	5	8	Clear to Send +
Clear to Send -	19	7	Clear to Send -
Send Timing +	10	4	Serial Clock Transmit +
Send Timing -	24	5	Serial Clock Transmit -
Receive Timing +	11	12	Serial Clock Receive +
Receive TIming -	25	11	Serial Clock Receive -
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 13 > 28			
Pin 14 > 29			
Pin 41 > 43			

50-Pin to 44-Pin Cable Adapter (Order No. 7947)

Note: This adapter cable allows you to connect an existing 44-pin cable to a 50-pin port. The interface is automatically selected.



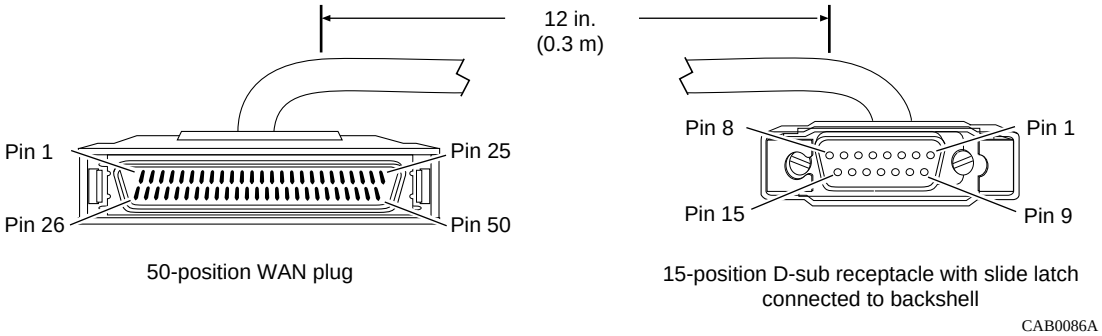
Industry Interface Type: Cable-dependent

Bay Networks 50-Pin Termination		Bay Networks 44-Pin Termination	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data +
Send Data -	27	16	Send Data -
Receive Data +	3	3	Receive Data +
Receive Data -	28	17	Receive Data -
Request to Send +	4	4	Request to Send +
Request to Send -	29	18	Request to Send -
Clear to Send +	5	5	Clear to Send +
Clear to Send -	30	19	Clear to Send -
Data Set Ready +	6	6	Data Set Ready +
Data Set Ready -	31	20	Data Set Ready -
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	8	Data Terminal Ready +
Data Terminal Ready -	33	22	Data Terminal Ready -
Data Carrier Detect +	9	9	Data Carrier Detect +
Data Carrier Detect -	34	23	Data Carrier Detect -
Send Timing +	10	10	Send Timing +
Send Timing -	35	24	Send Timing -
Receive Timing+	11	11	Receive Timing +
Receive Timing-	36	25	Receive Timing -
Transmitter Timing+	12	12	Transmitter Timing +
Transmitter Timing-	37	26	Transmitter Timing -
RTIN#	13	13	RTIN#
RTINB#	38	28	RTINB#
Clear to Send#	14	14	Clear to Send#
CTSIN#	39	29	CTSIN#
RTS#	15	15	RTS#
ST#	40	30	ST#
V.35 Send Timing-	16	31	V.35 Send Timing-

Bay Networks 50-Pin Termination		Bay Networks 44-Pin Termination	
Signal	**Pin # to Pin #**		**Signal**
V.35 Send Timing +	41	32	V.35 Send Timing +
V.35 Receive Timing -	17	33	V.35 Receive Timing -
V.35 Receive Timing +	42	34	V.35 Receive Timing +
V.35 Receive Data -	18	35	V.35 Receive Data -
V.35 Receive Data +	43	37	V.35 Receive Data +
V.35 Send Data -	19	36	V.35 Send Data -
V.35 Send Data +	44	38	V.35 Send Data +
V.35 Transmitter Timing -	20	39	V.35 Transmitter Timing -
V.35 Transmitter Timing +	45	40	V.35 Transmitter Timing +
UNBE	46	41	UNBE
V35D	47	42	V35D
Ground	48	43	Ground
Send Common	49	44	Send Common

50-Pin to 15-Pin V.35 Cable Adapter (Order No. 7948)

Note: This adapter cable allows you to connect an existing 15-pin V.35 cable (Order No. 7215 or 7216) to a 50-pin port. The V.35 interface is automatically selected.



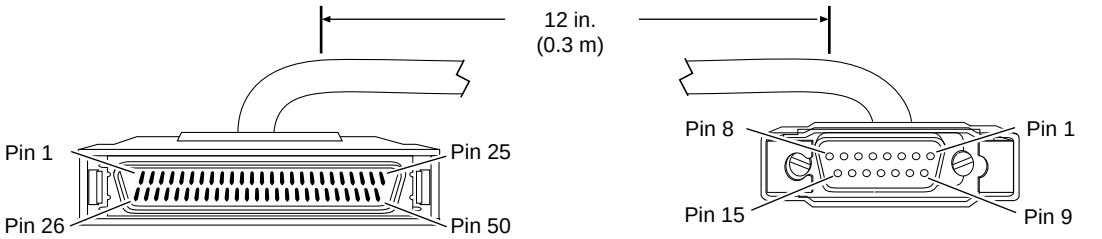
Industry Interface Type: V.35

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		Termination to Existing Cable	
Signal	**Pin # to Pin #**		**Signal**
V.35 Receive Data +	43	14	Receive Data +
V.35 Receive Data -	18	13	Receive Data -
V.35 Send Data +	44	2	Send Data +
V.35 Send Data -	19	3	Send Data -
Data Carrier Detect +	9	10	Data Carrier Detect +
Request to Send +	4	6	Request to Send +
Clear to Send +	5	8	Clear to Send +
Data Set Ready +	6	15	Data Set Ready +
V.RT +	42	12	Receive Timing +
VRT -	17	11	Receive Timing -
VRT +	14	4	Send Timing +
VRT -	16	5	Send Timing -
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31 > 34		Pin 1 > 7 > 9	
Pin 13 > 38			
Pin 14 > 39			
Pin 46 > 47 > 48			

50-Pin to 15-Pin RS-422 Cable Adapter (Order No. AA0018024)

Note: This adapter cable allows you to connect an existing 15-pin RS-422 cable (Order No. 7315) to a 50-pin port. The RS-422 interface is automatically selected.



50-position WAN plug

15-position D-sub receptacle with slide latch connected to backshell

CAB0086A

Industry Interface Type: RS-422

Caution: You cannot use this cable adapter to provide a clock (master) to an attached service. This is a passive straight-through cable.

Bay Networks Termination		Termination to Existing Cable	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	2	Send Data +
Send Data -	27	3	Send Data -
Receive Data +	3	14	Receive Data +
Receive Data -	28	13	Receive Data -
Request to Send +	4	6	Request to Send +
Request to Send -	29	15	Request to Send -
Clear to Send +	5	8	Clear to Send +
Clear to Send -	30	7	Clear to Send -
Data Carrier Detect +	9	10	Data Carrier Detect +
Data Carrier Detect -	34	9	Data Carrier Detect -
Send Timing +	10	4	Serial Clock Transmit +
Send Timing -	35	5	Serial Clock Transmit -
Receive Timing +	11	12	Serial Clock Receive +
Receive Timing -	36	11	Serial Clock Receive -
Signal Ground	7	1	Signal Ground
Internal Wire Connections			
Pin 13 > 38			
Pin 14 > 39			
Pin 46 > 48			

Index

Numbers

50, 6-66
7115, Ethernet cable, 3-3
7116, 15-pin to RS-422 (V.25bis) cable, 7-3
7117, 15-pin to RS-422 (raise DTR) cable, 7-5
7118, 15-pin to RS-232 (raise DTR) cable, 7-7
7119, 15-pin to RS-232 (V.25bis) cable, 7-8
7120, 15-pin to V.35 (V.25bis) cable, 7-9
7121, 15-pin to V.35 (raise DTR) cable, 7-10
7122, 44-pin to 15-pin RS-232 cable adapter, 8-3
7123, 44-pin to 15-pin X.21 cable adapter, 8-5
7124, 44-pin to 15-pin V.35 cable adapter, 8-7
7125, Token Ring MAU cable, 3-4
7126, Token Ring MAU cable (with ferrite bead), 3-5
7128, Token Ring to RJ-11 cable, 3-6
7131, 44-pin to 15-pin RS-422 cable adapter, 8-9
7135, FDDI FSD to FSD cable, 3-7
7136, FDDI FSD to straight-tip cable, 3-7
7137, 44-pin to V.35 (raise DTR) cable, 7-11
7138, 44-pin to RS-232 (raise DTR) cable, 7-13
7139, 44-pin to RS-422 (raise DTR) cable, 7-15
7150, MCT1 clock cable, 5-11
7151, MCT1 15-pin loopback connector, 5-12
7152, MCT1 RJ-48 loopback connector, 5-13
7153, MCT1 crossover cable, 5-14
7154, MCT1 RJ-48 loopback cable, 5-15
7155, MCT1 15-pin loopback cable, 5-16
7156, MCT1 RJ-48 straight-through cable, 5-17
7157, MCT1 15-pin straight-through cable, 5-18
7158, 15-pin to male V.35 cable, 6-17
7159, 44-pin to male V.35 cable, 6-18
7160, MCE1 crossover cable, 5-19
7161, MCE1 straight-through cable, 5-20
7162, MCE1 coaxial cable, 5-21
7163, FDDI SC duplex to SC duplex, MM fiber cable, 3-9
7164, FDDI SC duplex to straight-tip, SM fiber cable, 3-8
7165, FDDI SC duplex to SC duplex, SM fiber cable, 3-9
7167, MCE1 DB9 to DB15 straight-through cable, 5-22
7168, MCE1 DB9 to DB15 crossover cable, 5-23
7169, ATM cable, 3-10
7215, 15-pin to synchronous V.35 cable, 6-20
7216, 15-pin synchronous to V.35 with DTR cable, 6-22
7218, RS-232 synchronous pass-through cable, 6-23
7219, 15-pin synchronous to V.35 pass-through cable, 6-24
7220, 44-pin synchronous to V.35 cable, 6-26
7221, 15-pin synchronous to X.21 cable, 6-28
7224, 44-pin synchronous to X.21 cable, 6-29
7255, 15-pin synchronous to RS-232 cable, 6-30
7256, 15-pin synchronous to V.28 cable, 6-31
7260, 15-pin to 15-pin crossover cable, 6-32

7315, 15-pin synchronous to RS-422 cable, 6-34
7318, 44-pin synchronous to RS-422 cable, 6-36
7401, T1 to CSU DTE cable, 5-24
7415, T1 to Customer Premise Equipment cable, 5-25
7525, console cable, for all except AFN and AN, 2-3
7526, console cable, AFN/AN only, 2-4
7527, AT serial console cable, 2-5
7650, CSU network receptacle to RJ-45 cable, 5-26
7750, CSU network receptacle to spade terminals cable, 5-27
77850, modem cable for BLN, BLN-2, or BCN platforms only, 2-7
7825, modem cable for all except BLN, BLN-2, or BCN platform, 2-6
7826, 44-pin synchronous to RS-232 cable, 6-38
7830, HSSI DCE to DTE, 10-ft cable, 4-3
7831, HSSI DCE to DTE, 50-ft cable, 4-3
7832, HSSI crossover cable, 4-5
7833, RS-232 synchronous pass-through cable, 6-39
7834, 44-pin to V.35 pass-through cable, 6-1
7835, V.35 44-pin to 44-pin crossover cable, 6-42
7836, V.35 44-pin to 15-pin crossover cable, 6-44
7837, 44-pin synchronous to V.28 cable, 6-46
7932, 50-pin to V.35 cable, 6-48
7933, 50-pin to V.35 (raise DTR) cable, 7-17
7934, 50-pin to RS-232 cable, 6-50
7935, 50-pin to RS-232 (raise DTR) cable, 7-19
7936, 50-pin to X.21 cable, 6-51
7937, 50-pin to RS-422 cable, 6-52
7938, 50-pin to 50-pin crossover cable, 6-54
7939, 50-pin to 15-pin crossover cable, 6-56
7940, 50-pin to 44-pin crossover cable, 6-58
7941, 15-pin to F RS-232 synchronous pass-through cable, 6-60
7942, 15-pin to F V.35 synchronous pass-through cable, 6-61
7943, 44-pin to F RS-232 synchronous pass-through cable, 6-62
7944, 44-pin to F V.35 synchronous pass-through cable, 6-63
7945, 50-pin to F RS-232 synchronous pass-through cable, 6-65
7946, 50-pin to F V.35 synchronous pass-through cable, 6-66
7947, 50-pin to 44-pin V.35 cable adapter, 8-11
7948, 50-pin to 15-pin V.35 cable adapter, 8-14

A

AA0018001, MCE1 DB9 to mod jack cable, 5-4
AA0018002, MCE1 DB9 to unterminated cable, 5-5
AA0018003, 15-pin to F X.21 synchronous pass-through cable, 6-4
AA0018004, 44-pin to F X.21 synchronous pass-through cable, 6-6
AA0018005, 50-pin to X.21 synchronous pass-through cable, 6-1
AA0018006, Quad MCT1 clock cable, 5-6
AA0018011, 15-pin to RS-530 straight-through cable, 6-10
AA0018012, 44-pin to RS-530 straight-through cable, 6-12
AA0018013, 50-pin to RS-530 straight-through cable, 6-14
AA0018014, MCE1 RJ-45 to RJ-45 cable, 5-7
AA0018015, MCE1 RJ-45 to unterminated cable, 5-8
AA0018021, Quad MCT1 crossover cable, 5-9
AA0018022, Quad MCT1 straight-through cable, 5-10

AA0018023, 50-pin to V.28 cable, 6-16
AA0018024, 50-pin to 15-pin RS-422 cable adapter, 8-16
AFN/AN console interface to ASCII terminal cable, 2-4
ATM cable, SC to straight-tip MMF, 3-10
Attachment Unit Interface (AUI), defined, 1-9

B

basics, connector, 1-8
Bay Networks Press, xxv
BLN, BLN-2, or BCN to modem cable, 2-7
building cables, 1-11

C

cable adapters
  RS-232 44-pin to 15-pin, 8-3
  RS-422 44-pin to 15-pin, 8-9
  RS-422 50-pin to 15-pin, 8-16
  V.35 44-pin to 15-pin, 8-7
  V.35 50-pin to 15-pin, 8-14
  V.35 50-pin to 44-pin, 8-11
  X.21 44-pin to 15-pin, 8-5
cables
  building your own, 1-11
  finding in this guide, 1-4
  listed by category, 1-3
  type, 1-1
CCITT series connectors, defined, 1-9
channel service unit (CSU), 5-1
coaxial cables, MCE1, 5-21
connection categories, 1-3
connectors
  MCT1 loopback
    15-pin, 5-12
    RJ-48, 5-13
  terminology, 1-8
  types, 1-9
    examples (diagram), 1-10
console cables
  AFN and AN only, 2-4
  all devices except AFN and AN, 2-3
  AT serial connection, 2-5
  listed, 2-1
crossover cables
  15-pin to 15-pin, 6-32
  50-pin to 15-pin, 6-56
  50-pin to 44-pin, 6-58
  50-pin to 50-pin, 6-54
  HSSI, 4-5
  MCE1
    9-pin to 15-pin, 5-23
    9-pin to 9-pin, 5-19
  MCT1
    15-pin to 15-pin, multichannel, 5-9
    15-pin to RJ-48, 5-14
  V.35
    44-pin to 15-pin, 6-44
    44-pin to 44-pin, 6-42
custom cables, 1-11
customer support
  programs, xxv
  Technical Solutions Centers, xxvi

D

dialup services cables
  15-pin to RS-232 (raise DTR), 7-7
  15-pin to RS-232 (V.25bis), 7-8
  15-pin to RS-422 (raise DTR), 7-5
  15-pin to RS-422 (V.25bis), 7-3
  15-pin to V.35 (raise DTR), 7-10
  15-pin to V.35 (V.25bis), 7-9
  44-pin to RS-232 (raise DTR), 7-13
  44-pin to RS-422 (raise DTR), 7-15
  44-pin to V.35 (raise DTR), 7-11
  50-pin to RS-232 (raise DTR), 7-19
  50-pin to V.35 (raise DTR), 7-17
  listed, 7-1
DSX, 5-1
DTE to DCE connector, defined, 1-9
dust covers, fiber optic connector, 1-9

E

E1 cables
listed, 5-1
Ethernet cable, 3-3

F

FC connector, defined, 1-9
FDDI cables, 3-7 to 3-9
fiber optic connector, dust cover, 1-9
finding cables by
category, 1-3
industry interface type, 1-12
order number, 1-4
fixed shroud duplex (FSD) connector, defined, 1-9

H

how to use this guide, 1-2
HSSI cables
crossover, 4-5
DCE to DTE, 10 ft and 50 ft, 4-3
listed, 4-1

I

industry interface type
defined, 1-12
E1, 5-4, 5-5, 5-7, 5-8
E1/G.703, 5-19 to 5-23
Ethernet/802.3, 3-3
High-Speed Serial Interface (HSSI), 4-3, 4-5
RS-232-C, 2-3, 2-4, 2-5, 2-6, 2-7, 6-23, 6-30, 6-38, 6-39, 6-50, 6-60, 6-62, 6-65, 7-7, 7-8, 7-13, 7-19, 8-3
RS-422, 8-9, 8-14, 8-16
RS-449/RS-422, 6-34, 6-36, 6-52, 7-3, 7-5, 7-15
RS-530, 6-10, 6-12, 6-14
T1/DS1, 5-9, 5-10, 5-14 to 5-18, 5-24 to 5-27
with external clock, 5-6, 5-11
token ring/802.5, 3-4 to 3-6
V.28 (V.10), 6-16, 6-31, 6-46
V.35, 6-32, 8-7, 8-11
V.35 (V.10 and V.11), 6-17 to 6-22, 6-24, 6-26, 6-40, 6-42, 6-44, 6-48, 6-54, 6-56, 6-58, 6-61, 6-63, 6-66, 7-9, 7-10, 7-11, 7-17
X.21, 6-4, 6-6, 6-8, 8-5
X.21 (V.11), 6-28, 6-29, 6-51
X3T9.5 PMD/FDDI, 3-7 to 3-10
industry standards, specifications, and recommendations, 1-11
interface, defined, 1-8

L

local area network (LAN) cables
Ethernet, 3-3
FDDI, 3-7 to 3-9
listed, 3-1
Token Ring, 3-4 to 3-6
loopback cables, MCT1
15-pin, 5-16
RJ-48, 5-15
loopback connectors, MCT1
15-pin, 5-12
RJ-48, 5-13

M

MCE1 cables
- coaxial, 5-21
- crossover
  - 9-pin to 9-pin, 5-19
  - DB9 to DB15, 5-23
- DB9 to mod jack, 5-4
- DB9 to unterminated, 5-5
- RJ-45 to RJ-45, 5-7
- RJ-45 to unterminated, 5-8
- straight-through
  - 9-pin to 9-pin, 5-20
  - DB9 to DB15, 5-22

MCT1, 5-1

MCT1 cables
- 15-pin to 15-pin and 9-pin (Y-cable), 5-6
- clock, 5-11
- crossover
  - 15-pin to 15-pin, 5-9
  - 15-pin to RJ-48, 5-14
- loopback
  - 15-pin connectors, 5-16
  - RJ-48 connectors, 5-15
- straight-through, 5-10
  - 15-pin, 5-18
  - RJ-48, 5-17

MCT1 loopback connectors
- 15-pin, 5-12
- RJ-48, 5-13

media access unit (MAU), defined, 1-9

modem cable
- BLN, BLN-2, and BCN platforms only, 2-7
- for all except BLN, BLN-2, and BCN platforms, 2-6
- listed, 2-1

multistation access unit (MAU), defined, 1-9

P

pass-through cables
- 15-pin to female RS-232, 6-60
- 15-pin to female V.35, 6-61
- 15-pin to female X.21, 5-1
- 15-pin to RS-232, 6-23
- 15-pin to V.35, 6-24
- 15-pin to X.21, 6-4
- 44-pin to female RS-232, 6-62
- 44-pin to female V.35, 6-63
- 44-pin to RS-232, 6-39
- 44-pin to X.21, 6-6
- 50-pin to female RS-232, 6-65
- 50-pin to female V.35, 6-66
- 50-pin to X.21, 6-8

physical interface, 1-8

pins, defined, 1-8

plug, defined, 1-8

publications, ordering, xxv

R

receptacle, defined, 1-8

recommended series (RS), defined, 1-9

registered jack (RJ), defined, 1-9

RS-422 cables
- 15-pin to, 6-34
- 44-pin to, 6-36
- 50-pin to, 6-52

RS-530 cable
- 15-pin to, 6-10
- 44-pin to, 6-12
- 50-pin to, 6-14

S

SC duplex connector, defined, 1-9

sockets
- defined, 1-8

software considerations, choice of cable, 1-2

spade terminals, defined, 1-9

special requirements, 1-1

specifications, cable, 1-11

standard synchronous cables
- 15-pin to RS-232, 6-30

15-pin to RS-422, 6-34
15-pin to V.28, 6-31
15-pin to V.35, 6-20
15-pin to V.35 with DTR, 6-22
15-pin to X.21, 6-28
44-pin to RS-232, 6-38
44-pin to RS-422, 6-36
44-pin to V.28, 6-46
44-pin to V.35, 6-26
44-pin to X.21, 6-29
50-pin to V.28, 6-16
listed, 6-1 to 6-3
V.35 44-pin to 15-pin crossover, 6-44
V.35 44-pin to 44-pin crossover, 6-42
standards, industry, 1-11
straight-tip connector, defined, 1-9
synchronous pass-through cables. *See* pass-through cables

T

T1, 5-1
T1 cables
CSU DTE connection, 5-24
CSU network receptacle to RJ-45, 5-26
CSU network receptacle to spade terminals, 5-27
customer premises connection, 5-25
Framer, 5-24 to 5-26
listed, 5-1
multichannel clock, 5-11
multichannel crossover, 5-14
multichannel loopback, 5-15, 5-16
multichannel straight-through, 5-17, 5-18
quad multichannel, 5-6
quad multichannel crossover, 5-9
quad multichannel straight-through, 5-10
Technical Solutions Centers, xxvi
termination, defined, 1-8
terminology, 1-8
Token Ring cables, 3-4 to 3-6

U

using this guide, 1-2

V

V.28 cables
15-pin to, 6-31
44-pin synchronous to, 6-46
50-pin synchronous to, 6-16
V.28 interface, defined, 1-9
V.35 cables
15-pin synchronous with DTR, 6-22
15-pin to, 6-20, 6-24
15-pin to male, 6-17
44-pin to, 6-26
44-pin to male, 6-18
50-pin to, 6-48
V.35 interface, defined, 1-9

X

X.21 (V.11) cables
15-pin to, 6-28
44-pin to, 6-29
50-pin to, 6-51
X.21 cables
15-pin to, 6-4
44-pin to, 6-6
44-pin to 15-pin cables adapter, 8-5
50-pin to, 6-8
X.21 interface, defined, 1-9
X3T9.5 PMD/FDDI cables
FDDI FSD to FSD, 3-7
SC duplex to SC duplex, 3-9
SC duplex to straight tip, 3-8
SC to straight tip MMF, 3-10